

FLORIDA WILDLIFE[®]

Volume 40, Number 1

January-February 1986



**ONE-THIRD OF
ALL FIREARM HUNTING
ACCIDENTS ARE SELF-INFLICTED**



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HARM
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HANDLE ALL FIREARMS WITH CARE!

FLORIDA WILDLIFE®

Volume 40, Number 1

January-February 1986



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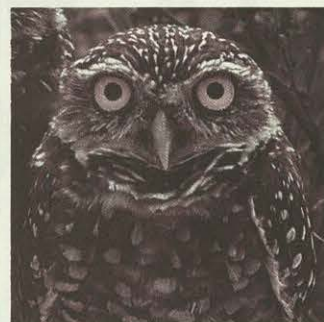
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Coral reefs, page 23.



Owls, page 39.

- 2 16 Years of Friendship and Comfort, By Bob McNally
- 4 A Bird in the Bush Is Worth the Time, By John M. Dean
- 6 Confessions of a Worm Farmer, By John Waters Jr.
- 8 A Tribute to Francis S. Taylor, By Mark A. Trainor
- 10 Brackish-Water Bass Fishing, By Larry Larsen
- 14 Art Biro, Wildlife Artist, By Paige Moody
- 18 Barrier Islands, By Dr. Robert H. Gore
- 23 Deep Within the Water Planet,
By John Waters Jr. & Andrew J. Peterson
- 29 Wild Gene Diversity and Preservation, By John Waters Jr.
- 33 Zea mays—The American Cereal Grain, By John Waters Jr.
- 35 A Limited Edition Wildlife Art Print for You
- 36 Callene's First Deer, By Larry Martin
- 38 Bird Watching, Eye to Eye, By Frank Rathbun
- 39 Delicate Balance—Florida's Burrowing Owl, By Vic Heller
- 42 1986 FLORIDA WILDLIFE Nature Photography Contest

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DEPARTMENTS

- 40- Ease on Out
- 41- Outdoor Library
- 44- It's The Law
- 45- Hunter Education News
- 46- Conservation Update

THE COVERS

Our front cover shows the gray squirrel, one of the most familiar mammals in Florida, in a photograph by John Waters Jr. A pair of bobwhite quail graces our back cover in a photograph by William A. Greer.

16 YEARS OF FRIENDSHIP AND COMFORT

By Bob McNally

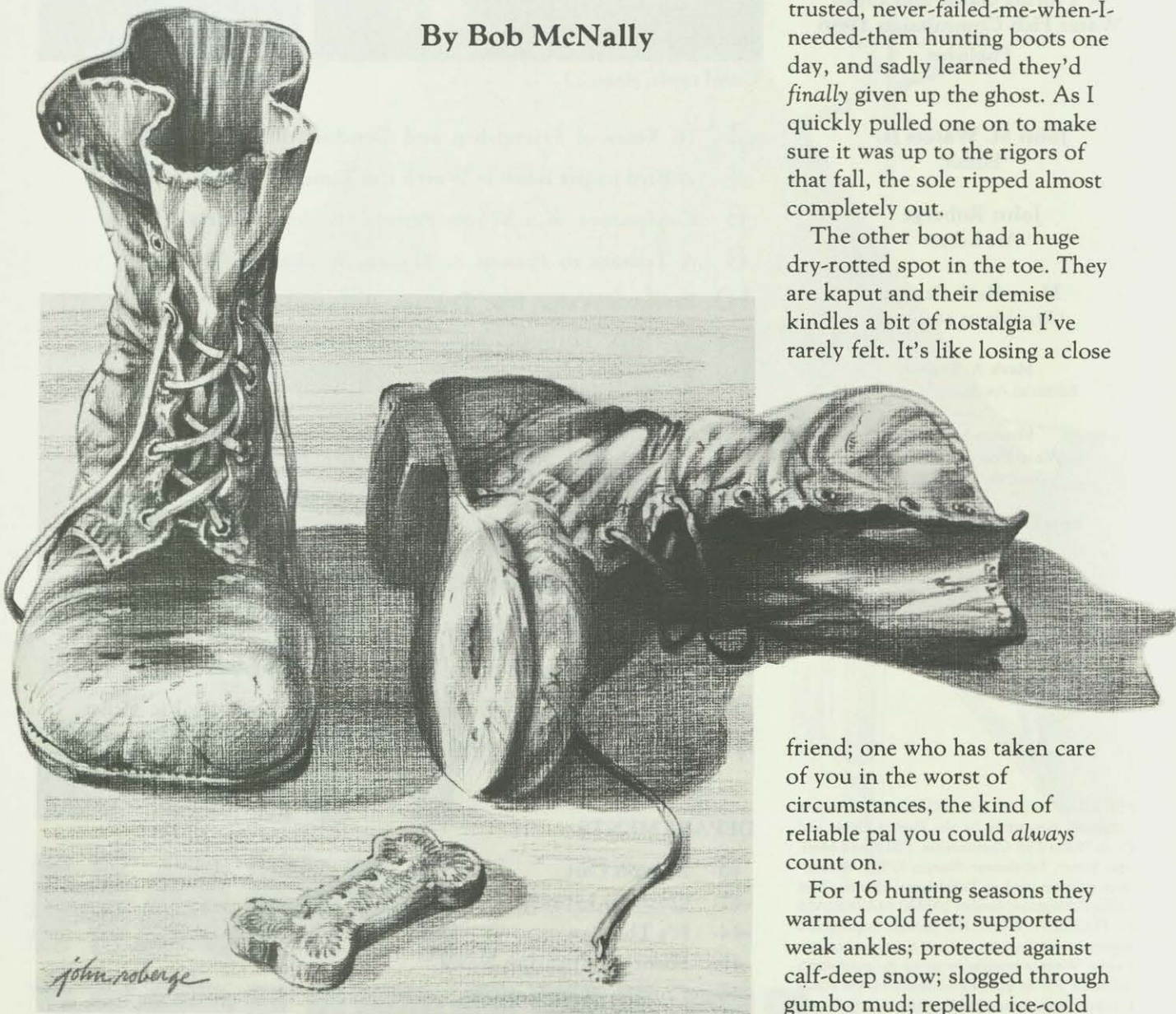
These boots were made for hunting—but they've trudged their last mile. Goodbye ol' boots.

Like many sportsmen preparing for Florida's annual hunting season, I pulled out my old, reliable, trusted, never-failed-me-when-I-needed-them hunting boots one day, and sadly learned they'd finally given up the ghost. As I quickly pulled one on to make sure it was up to the rigors of that fall, the sole ripped almost completely out.

The other boot had a huge dry-rotted spot in the toe. They are kaput and their demise kindles a bit of nostalgia I've rarely felt. It's like losing a close

friend; one who has taken care of you in the worst of circumstances, the kind of reliable pal you could *always* count on.

For 16 hunting seasons they warmed cold feet; supported weak ankles; protected against calf-deep snow; slogged through gumbo mud; repelled ice-cold



water; guarded against briars, sandspurs and cactus needles and found safe paths on treacherous mountain slopes. They never complained about the odd and early hours when they were jostled from the closet, roughly secured to tired old feet, then stomped about and expected to perform a vital function.

The forest-green insulated boots were a Christmas gift, and I still remember the fragrant aroma of their soft new leather as they were inspected for the first time. They were very expensive even back then, and were much appreciated. I do not recall anything else received that bright Christmas morning. They were first called into action only a few days later during a late-season deer hunt. Despite biting cold that nipped all other parts of my body, my feet were warm inside my new-found friends that day. The boots were there another day, too, as a friend and I rejoiced over the first white-tailed buck I ever downed. Years later, the boots were the only witnesses to my first, only and probably ever, triple on quail. And they were always there whenever a tom turkey came in to my calls.

Over the years, those boots tested the terrains from British Columbia to Maine and from Manitoba to Mexico. They left tracks on sagebrush flats beside those of antelope and mule deer; plodded across the Western rock rim for chukar partridge, blue grouse and Hungarian partridge;

and they stomped into goose pits from Maryland to Missouri to Idaho. They've stood silently in deer and bear stands throughout the South and elsewhere.

Never once did they fail me.

The steam has risen from them as they lay drying beside outdoor bonfires, indoor fireplaces, camp stoves and gas lanterns—within the Arctic Circle, in the wild Saskatchewan bush country and in dozens of long-forgotten weathered winter hunting and fishing shacks across much of this country and others.

There's no way of knowing how many square miles of rabbit thickets, woodcock coverts, pheasant fields, grouse ridges, turkey territories and quail habitats the boots have traversed. It's the saga of long-distance hunting companions.

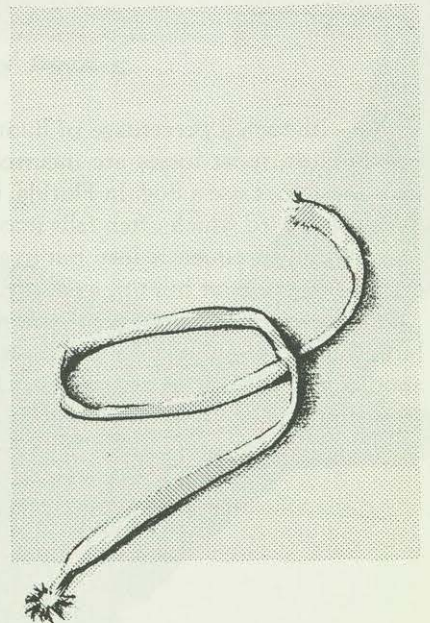
I've owned many pairs of hunting boots over the years, but these very special ones were never too hot, even in blistering desert weather. Just a single pair of insulated socks were all that was needed when they were worn even in sub-zero temperatures. And they were the only pair of leather boots I've ever owned that were *completely* waterproof. I first appreciated that during a cold Mississippi River duck hunt years ago, after I downed a pair of mallards and had to retrieve them from the far side of a beaver pond. I sloshed in to the depth of my ankles and grabbed the birds, but my feet remained warm and snug.

I honestly have no idea what

company manufactured the boots. The inside labels wore off years ago. I've already purchased another pair of hunting boots, but they'll never replace my old friends.

Several times I came close to tossing the old boots in the garbage, but I repeatedly prolonged that agony. They now sit wrinkled and weathered in a corner of the garage, showing their age and revealing their well-worn soles. Lately, my springer spaniel pup has taken them over as play things. She mouths them, tosses them about and generally does with them as young retrievers are expected to do with unwanted human footwear. It seems a fitting end for an old, veteran pair of hunting boots to help with the development of a wide-eyed little gun dog anxious to learn the ways of the wilds.

Even at trail's end the boots have proved invaluable. Close friends are like that. □



A BIRD IN THE BUSH IS WORTH THE TIME

By John M. Dean

Although a percentage of hunted game birds are lost, most losses are incurred by hunters who do not use a dog. In Florida, the mourning dove is one bird which often falls into this category. Snipe are also frequently lost, but to a much lesser extent due to lighter hunting pressure.

In the excitement of a dove shoot, it is easy to shoot a bird, watch it fall, then take your eyes off of it to shoot another bird. This is an easy way to lose it. Doves, even at medium speed, fly at a pretty good clip (about 30

mph), and when shot tend to be carried by momentum far beyond the point of impact.

One way to avoid losing a bird in this manner is to take a few more seconds to watch the bird fall, then mentally mark the spot by reference to a bush, tree, fence post, clump of grass or anything stationary that will give you a good perspective as to where the bird falls. If it falls into brush or heavy cover, forget about shooting another bird and go look for it immediately.

Another factor which contributes to the loss of birds is a lack of knowledge as to the effective killing range of the shotshell loads and muzzle choke combinations used. Under most circumstances, 35 yards is just about *maximum effective range* for a typical open choke and light-shot load used by many dove hunters. Pellets the size of #8 are small and rapidly lose energy, resulting in many "dusted" birds when used beyond their energy capabilities. On windy days or late in the season when birds tend to fly at 35- to 45-yard ranges, heavier shot and a tighter choke will help reduce losses.

Even with these techniques, hunters may find it difficult to find a downed bird, especially when shooting over weedy fields or near areas of heavy brush. When this happens, however, don't get discouraged. There are searching techniques that can greatly increase your chances of finding these birds.

One of these is *the circle* and another is *the grid*. Both are simple, but take a bit of patience and time. When using either method, a marker such as your hunting hat, shell vest or a handkerchief is first placed at or near the spot where you think the bird fell. Use of a marker is critical as it gives a readily visible reference point from anywhere in the area of your search pattern.

The circle method is basically making a series of circles, each one a little farther from the marker than the previous one. When employing the circle method,

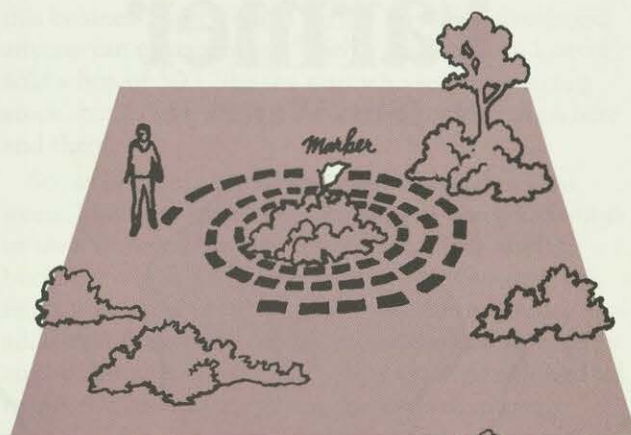
you must be careful not to widen it too quickly, because you may overlook the bird. The importance of walking directly to where you think the bird fell and dropping a marker cannot be over emphasized. Unless the bird is physically spotted as you approach, wandering around without a marker will usually result in your losing sight of the spot.

The grid method is more complicated than the circle method, but under most circumstances, it is more thorough. Very simply, the grid is an imaginary square with the marker in the center. The square must be large enough to include the area covered by the bird's momentum during its fall. If this is taken into account, then you can be reasonably sure that the bird is somewhere within the square.

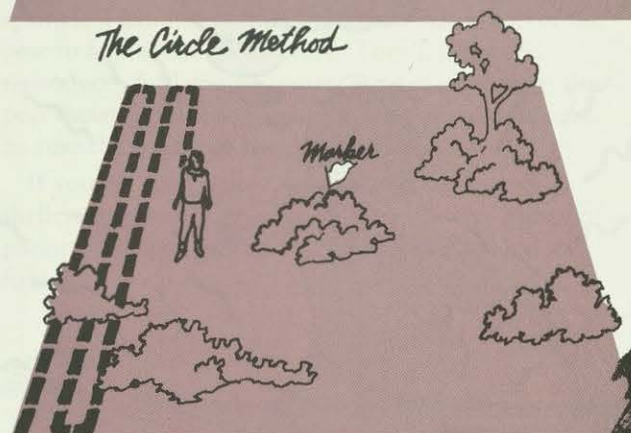
Basically, the grid method involves beginning in one corner of the square, then walking along one side to the opposite corner. There, move about two steps parallel from the side and walk back to the side where you began. Continue in this fashion until you find your bird. It helps to walk slowly, and confine your visual search area to only a short distance (about one step) left or right of the line you are walking.

When looking for a downed bird, feathers can be a great aid. Loose feathers pull out of birds as they contact trees, bushes and even high grasses. These feathers, usually found in small clumps, can lead you directly to the bird. At times however, especially on windy days, feathers can be very deceiving and may lead you away from the bird. They carry easily in the wind and tend to drift off the line of flight even in a slight breeze.

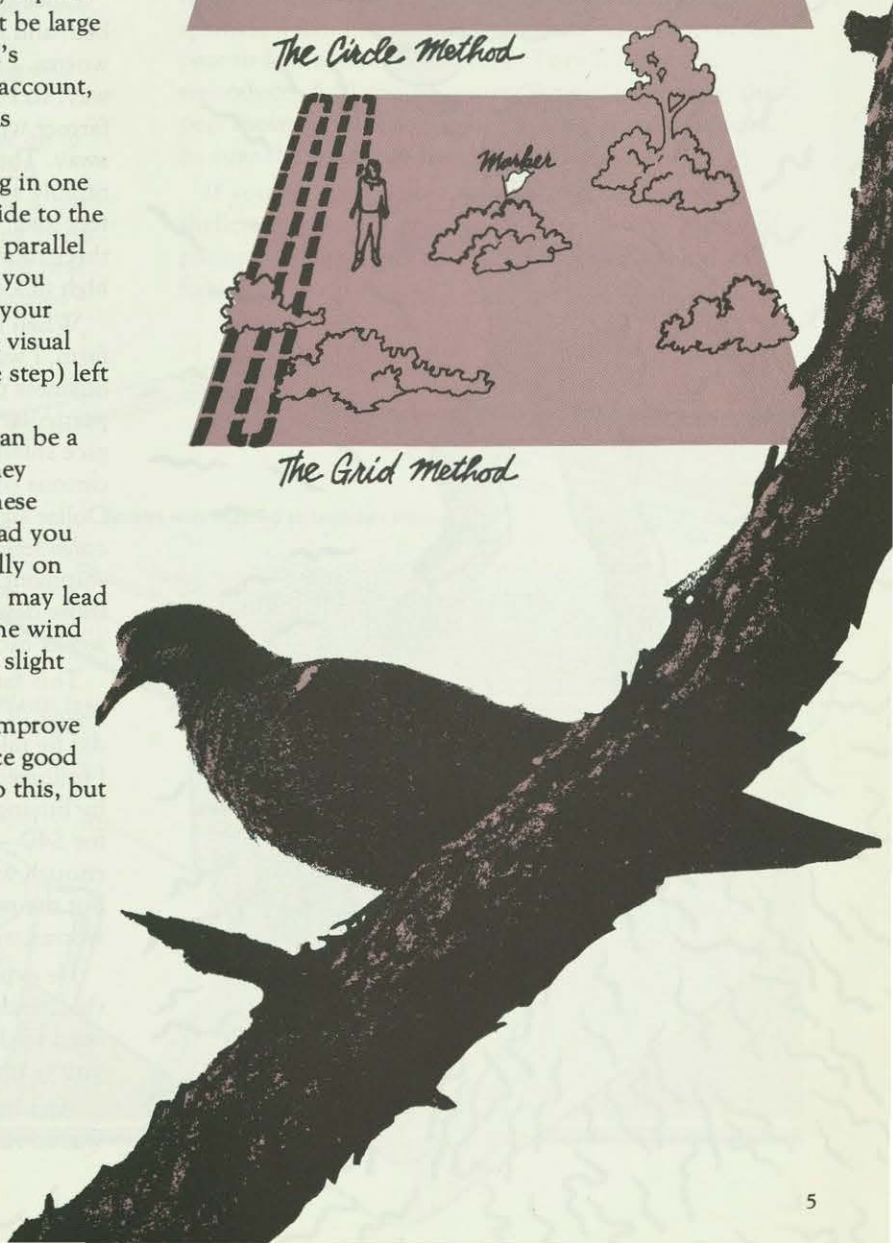
By taking time to find your birds, you will improve your successes while hunting, as well as practice good sportsmanship. It takes a little more time to do this, but ethical sportsmen owe this to the sport. □



The Circle Method



The Grid Method



Confessions of a Worm Farmer

By John Waters Jr.



I was a successful "worm farmer" once upon a time, so I should be an expert at telling you how to raise your own prime-quality earthworms for bait. But first, let me tell you about the business venture.

Like many young adults, I was looking for the perfect part-time, backyard business; one I could run after regular work hours and build to a *million-dollar* enterprise. Earthworms seemed to be just the perfect one for me. So, after considerable study of the simple techniques involved in raising these favorite fish-bait creatures, I built a four-foot-wide, 12-foot-long bed. The structure was inexpensive and simple—a rectangle of two rows of cemented concrete partition blocks and the sandy earth for a floor.

Next, I pulled a small utility trailer to a nearby supplier and purchased a load of natural Florida peat moss. This material was my choice of bedding material as it has no offensive odors and the best bait worms do quite well in it. It's the same kind of Florida peat used in many of the commercially mixed potting soils which most garden shops and supermarkets sell these days. It is also packaged in pure form, and this is the form to use.

Once the trailer load of peat was unloaded into the bed, and laid about a foot thick, all I needed was the worms. I was going about this enterprise in a wholesale way, so I next purchased a "picked over" bed from a farmer who raised African nightcrawlers some 40 miles away. This was my worm of choice, as they grow rapidly and sometimes reach lengths of 18 inches to two feet long. From an egg to fishing size takes only about three months, and their reproductive rate is extremely high in a controlled environment.

When I arrived with the utility trailer at his worm farm, I was immediately excited about the tremendous business prospects for worm farming. The owner of this particular farm was, that very afternoon, loading his nice shining new station wagon with 20 air-shipment cartons of 500 worms each for shipping to Wisconsin. Dollar signs began to flash before my eyes as I considered a promising future in the business. The shipment was worth around \$1,000—big money in those days—and he said he did as well quite a few weeks each year.

This farmer wasn't bashful about telling me there was plenty of room in the state for more worm farmers, nor did he mind telling me all the "secrets" of the business. I followed his sound recommendation to start my farm by buying the "picked over" bed he was willing to sell for \$40—an honest-to-goodness bargain. It probably had enough worms in it at the time to be worth that much, but the peat had been utilized almost to the limit by the worms, and it was time to change it and start anew.

He explained, "There are millions of egg capsules and thousands of small growing worms in that bed. All you need to do is shovel it on top of some fresh peat, and you're in business."

And he was right. In only two months, my worm bed was so full of nice fat African nightcrawlers that when

you slapped the side of the concrete blocks with your hand, their startled movements caused the surface of the peat to roll like a miniature earthquake.

Nightcrawlers are called by that name because they come to the soil surface at night. This is why burning a light over the bed at night is very important. One stormy July night, I realized just how *important* the light was.

It was one of those nights when a powerful thunderstorm of county-wide dimensions struck, and the electrical power went off. Also, because my worm bed had been constructed against the outside back wall of the utility room, just in line with the edge of the roof, the rain flowed like a small waterfall directly into the center. Previous rains during the first months of the great earthworm raising venture had not been so heavy as they were that night.

The resulting flood and total darkness caused a mass exodus of some few thousand crawlers. The outside walls of the house, the patio, the windows, the surrounding yard and even under the eaves of the roof were covered with wet, crawling worms. And, true to their reputation, some of them were 18 inches long.

Well, Lesson Number One was learned the hard way, as were other lessons to follow, especially in the important areas of the business involving packing and shipping.

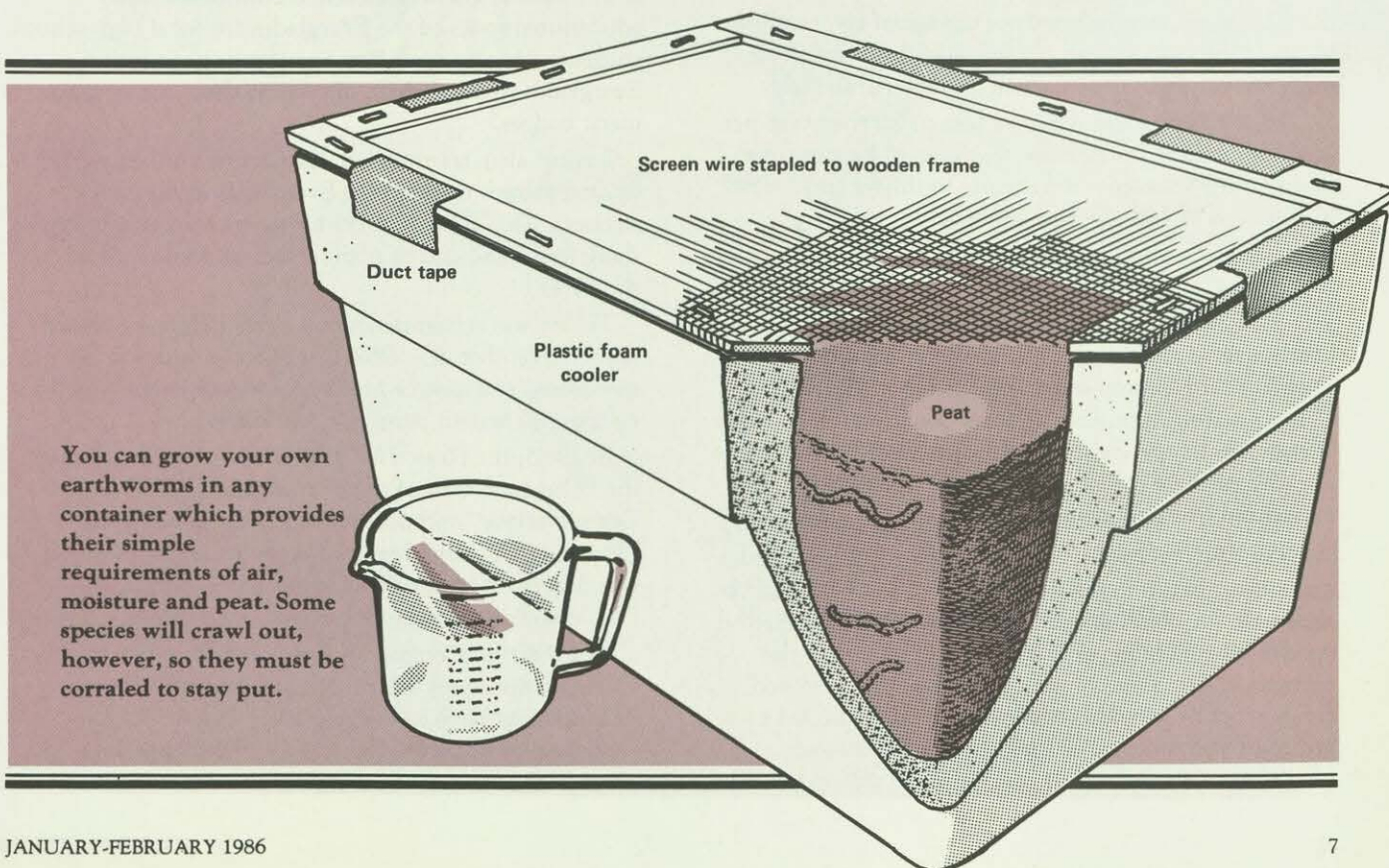
Lesson Number Two was that *worms must have air to live*. Desiring to present my retail distributors with nothing but the most modern package, I chose a one-pint plastic foam food container, with matching press-tight plastic lid as a *clean*, insulated container. The first shipment was clean, but only until all the worms died because the plastic lids had no air holes.

Next, it was learned that counting 55 worms per cup gets to be a chore after a few spare-time weekends of counting. Of course, it is a job where you can listen to Beethoven or Bach or whistle while you work. And if you wish, you can think about some other great way to make your first fortune, which is what I did.

After selling my home-grown brand of SUPERWORMS for a few months, I got out of the business. Not that it wasn't profitable, mind you. It was. In fact, it's really a good project for some people. However, if you ever get an offer from a promoter in this business, watch out. There is very little likelihood anyone can guarantee you'll sell a single worm. I never sold a box of 500, like the man who sold me starting stock, but I did sell a few cups of 50 to fish camps here and there.

So, as I began, I can tell you something about the worm business: *stay out of it*. Instead, if you get the urge to raise worms, raise a few in a plastic foam cooler, bucket, washtub or other container for your own use. Fill it with some ordinary peat (without chemical additives) from the garden shop and stock it with a few cups of purchased worms. Use duct tape or a hinged lid to attach a screen wire top to corral them in and sprinkle a handful of ordinary cornmeal on top of the peat to feed them once a week. They'll grow and reproduce. Add enough water, as needed, to keep the peat moist but not soggy. If you keep them outdoors, be sure the container has drainage holes.

If you get started now, by the time bream and shellcracker season rolls around, you'll have plenty of plump fishing worms to catch a real nice stringer of fish! □



A Tribute to FRANCIS S. TAYLOR

By Mark A. Trainor

For more than three decades, Francis S. "Franny" Taylor dedicated substantial labor to the conservation and preservation of the Florida Everglades and its unique blend of natural resources. He spent many long tiring weekends in the Everglades, away from his Miami Springs home, and this great wetland became his "home away from home."

Taylor was a determined conservationist who voluntarily worked to benefit wildlife in the Everglades. He made recreational use of the resources there and he believed in conserving them for the future. He was also dedicated to keeping the natural beauty intact there.

Taylor is best remembered for his "wildlife survival islands," a practical idea he conceived in 1966. When heavy winter rains flooded the Everglades that year, deer and other species began to starve as the high water covered the normally dry hammocks where they fed.

Anguished by the plight of drowning deer, Taylor and a few friends used their own money to rig a bulldozer blade onto the front of a halftrack vehicle, then began pushing up mounds of mud and dirt to form small refuge islands for the deer and other wildlife to live on during high water periods.

Taylor's son, George, who had ventured to the Everglades with his father since the age of six, recalled building the first islands. "It was such back-breaking work we barely built five small islands that first day.

"It took two or three people just to lift the bulldozer blade because we didn't have hydraulics. But, as time passed, improvements were made to the rig and several hundred small islands were built."

Taylor's constant drive and determination generated enthusiasm in local conservation clubs, the Commission and the Central and South Florida Flood Control District (now the South Florida Water Management District). The Commission and the Flood Control District were responsible for later construction of larger islands, up to one-eighth acre in size. *The Taylor Plan*, as the idea of these refuge islands came to be known, was supported by many conservationists.

Once deer, raccoons, rabbits, birds, alligators, turtles and snakes began to inhabit the islands, Taylor began to seek help for planting the islands with native vegetation species which could provide food and cover for the animals. Using some of his own money and donated funds from others who supported the plan, he led a group of volunteers who hand-planted seeds and seedlings on the islands.

Taylor is also remembered for his active role in the "Operation Deer Save" project (1966), in which several conservation organizations and the Commission participated in an effort to capture, treat, transport and release stranded deer to higher ground. Taylor's diverse efforts were later recognized by the Florida Wildlife Federation when they presented him their 1972 Wildlife Conservation Award by a unanimous vote.

His 33 years of sloshing through the Everglades provided Taylor many opportunities to accumulate a vast knowledge of the wildlife and ecosystem there, and he passed much of what he learned to both state and federal conservation agencies. He was also active in soil and water conservation, and pursued such other concerns as the prevention of soil erosion as well as methods to improve water quality. He favored the establishment of a balanced water flow through Everglades National Park.

Taylor was also active in fish restocking projects in various south Florida waterways and he participated in trial rice planting projects for waterfowl. He built feeders for wood ducks and other native waterfowl.

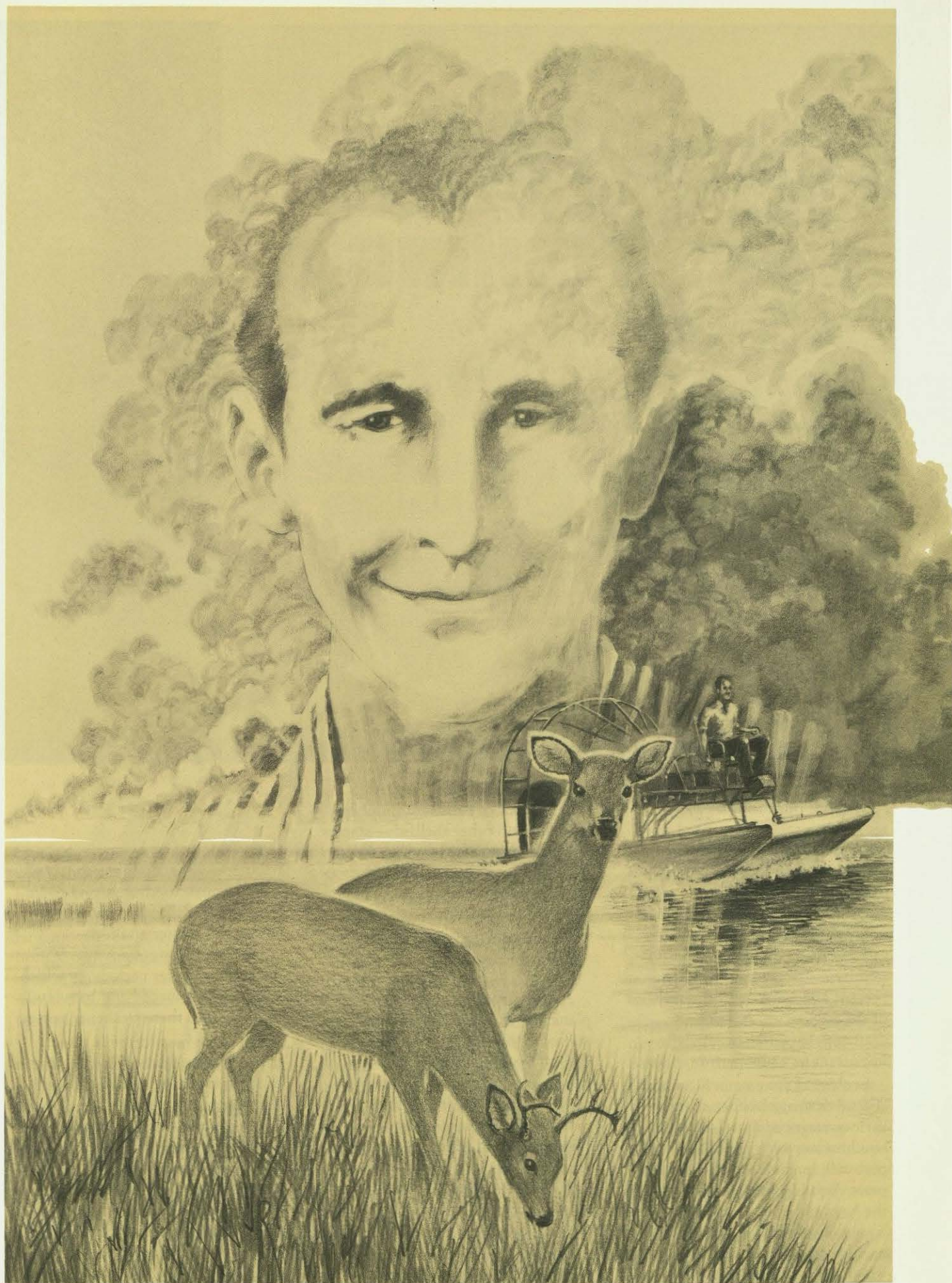
When Taylor was not in the Everglades, he sometimes visited schools. He taught young people about wildlife conservation and conducted many educational tours of the Everglades for local high school students. He also took Boy Scout groups into the Everglades to assist them in earning their conservation merit badges.

Taylor also transported legislators and citizen fact-finding groups through the Everglades in his own airboats. This allowed them to observe the conditions there first-hand and to plan for better conservation measures.

Taylor was recognized many times before he passed away September 20, 1982. And he continues to be recognized as a unique individual whose energetic efforts still benefit people and wildlife.

In 1983, the Florida Wildlife Federation established the "Outdoorsman of the Year Award for Conservation," and posthumously established the "Francis S. Taylor Memorial Award" in his honor. He was described by the Federation as the "Johnny Appleseed of the Everglades."

In 1985, the Commission renamed Water Conservation Area 3-B of the Everglades Wildlife Management Area as the Francis S. Taylor Wildlife Management Area in further honor of this tireless champion of conservation. □



BRACKISH-WATER BASS FISHING

By Larry Larsen

 Florida's coastal estuaries are a unique blend of rivers, creeks, freshwater and brackish marshes, wooded swamps and bays. The vast tidal river systems which puncture the Gulf Coast and the lower East Coast are teeming with bass forage—fingerlings of both saltwater and freshwater fish, shrimp, crabs, snails and salamanders. A few thousand miles of excellent brackish water bass fishing exist along Florida's coastline.

Many of our brackish waters remain in a relatively natural state which contributes to abundant forage and high numbers of largemouth bass in these environments. Bass in this kind of ecosystem are dominantly influenced by forage availability, salinity distribution, nutrients present and water-level fluctuations of the tributaries. A system's drainage characteristic is vitally important to a prosperous fishery.

Ecological systems in Florida's coastal drainage basins are in various stages of dynamic equilibrium; what happens to one part will, in some way, affect other parts. Too high a salinity content in the bays and swamps may cause the largemouth to move upstream to narrow, fresher river tributaries which drain higher lands, for

example. Bass and their forage move about considerably within the coastal estuaries, depending on the water characteristics.

Man's involvement in damming, dredging and polluting tidal-influenced waters can definitely change the quality of an ecosystem. The effects of various kinds of pollution, reduced nutrient levels and increased salinity, which have resulted from these activities in some estuaries, have killed many coastal bass at an early age. At times, a lack of sufficient numbers of snails and other shellfish—staples in a brackish-water bass diet—may lead to slow starvation of bass dwelling there.

Tidewater Actions

An estuary which is rich in plankton (microscopic plants and animals) enhances environmental quality for bass forage organisms which feed on plankton. When freshwater rivers bring in such dissolved nutrients as nitrates, phosphates and other organic matter (such as leaves and branches from upstream drainages), plankton production may be boosted.

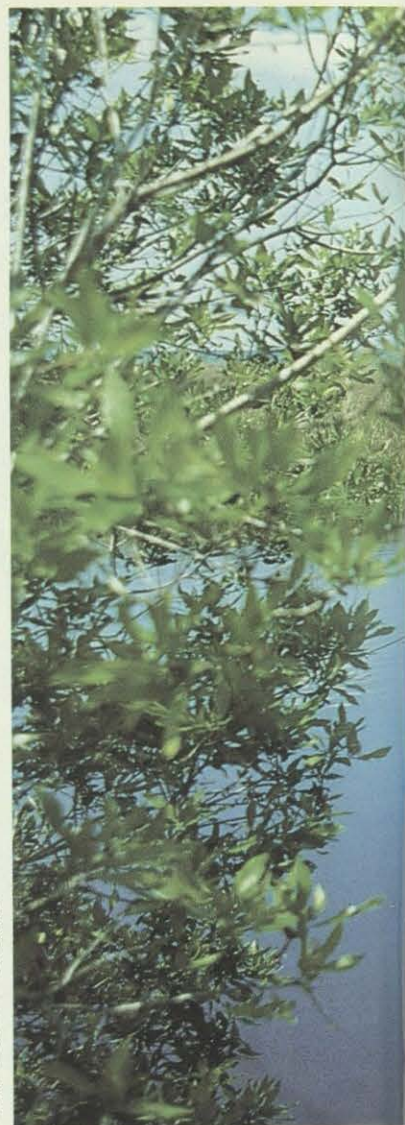
Plankton productivity, low salinity and nutrient-rich waters depend on the flow rate and

fluctuations of an estuary's tributaries. Wetlands which have some annual flooding appear to be most beneficial to largemouths. When leaf matter and forage organisms are swept downriver during high water periods, brackish waters are freshened and bass tend to move into these freshened zones.

Available bass forage is also dependent on natural flushing cycles of the waterways, and any lack of flushing action can thus affect bass. Silt deposits, which often increase when these natural cycles are disturbed, can destroy important brackish-water habitat for snails, clams, crabs and other shellfish which make up an important part of the coastal largemouth diet.

Fish which live in fresh or

Larry Larsen-Photograph





brackish water and migrate to salt water to spawn also provide important bass forage. Eel and mullet are two such fish, and largemouths definitely like to eat both. Small fingerlings of other coastal water fish, such as menhaden, also become part of the food chain.

Brackish Buffer

Saltwater intrusion into brackish zones can also significantly affect largemouths and their forage. Strong winds, extremely high or low barometric pressures and rain runoff can cause brackish buffers between fresh water and salt water to move. Drought can also be conducive to saltwater intrusion

into brackish zones when freshwater levels become lower.

Bass are said to feed more in brackish water than in fresh water due to their greater metabolism rate at higher pH levels. Higher salt content constantly drains water from their body tissues, and to replenish it, bass have to work harder, and eat and drink more. Since so much of their forage intake goes into maintaining their body fluids, tidal largemouth bass seldom grow to record proportions.

Shrimp Cuisine

During marine shrimp spawning runs, a remarkably easy method exists to catch a limit of brackish-water largemouths. When shrimp

migrate from the sea into coastal rivers which have low saline levels, tidal-zone largemouths usually go on a feeding binge.

Florida shrimp usually make their annual spring spawning migrations into fresh water in March or April, and the average four-week event offers brackish-water bass an opportunity to enjoy this diet delicacy to the fullest. In the coastal estuaries, shrimp runs provide an ultimate feast. Young-of-the-year shrimp usually stay somewhat inland until about November, depending on the weather and the location of tidewaters in their area.

Shrimp migrate into sounds, harbors and bays and deep into freshwater tributaries, making them available to both largemouth bass ▷

and to anglers with knowledge of their superiority as a bait.

Bait shrimp can be netted easily in harbors, sounds, bays and adjoining freshwater estuaries at night. Hanging a lantern near the water allows a person with a long-handled net to see the shrimp when they run near the surface. Beneath bridges is an excellent place to catch them because the water flow is funneled and concentrated, and they also can be netted from anchored boats.

A cast net with fine mesh can be thrown over shallow flats at night to catch them or, more simply, live shrimp can be purchased from bait shops near coastal areas during most of the year. They will average about three inches in length at most shops, which is an adequate size for catching brackish-water bass. As with most bass baits, however, the bigger the better if you are going after wall-hangers. Five-inch-long morsels attract some king-sized fish!

While shrimp can be found all along the coasts of the United States, they are most commonly used for bait from Virginia southward along the Atlantic Coast and around the Gulf states. White, brown and pink shrimp are readily taken by bass, but most anglers use the brown or white.

If the native baits are cared for properly, they can be transported easily. Water in the bait tank should be brackish and cold, and *a good aeration system is vital*. The perfect brackish-water bass bait must be lively. Shrimp which die in the bait tank or on the hook are useless when trying to attract largemouths, so bait care is extremely important.

Fishing Salty Crustaceans

The shrimp runs begin in Florida's popular St. Johns River in June and lasts through the summer. Boat docks, piers and bridges are favorite hot spots along the lower 40 miles of the river for bass fishing with bait shrimp. Thick stands of flooded brush and pockets in grass and other aquatic vegetation also provide excellent opportunities to catch shrimp-loving bass.

Generally, boats are positioned upstream from a pier or dock, and the shrimp are drifted into and under the structure. An adjustable bobber aids in controlling the presentation and you can often tell whether bass are present or not by watching the shrimp's pulling movements on the float. If the bobber twitches during the drift into potential bass habitat, the shrimp is probably trying to evade a hungry predator.

Bait shrimp are easy to use. They are normally hooked through the head below the horn for best results, then fished about a foot off the bottom. While some anglers prefer to use a #4 or #6 treble hook, #2 or #1/0 single-shank hooks are also popular. If properly hooked, a

Brackish-water bass are fat, healthy and strong fighters.

shrimp will remain lively long enough to attract a bass.

There are many ways to fish the bait: one is to use conventional tackle and casting into areas being fished; but another exciting method is to use a 16-foot-long cane pole for flipping the bait under a dock or pier.

Many tidal bass anglers use long cane poles equipped with a 15-foot length of 30-pound-test monofilament line to haul lunker bass out from areas having barnacle-covered structures. In brackish waters, pilings and brush are usually encrusted with razor-sharp barnacles, and the leverage of a cane pole and heavy line are handy for landing largemouths up to 10 pounds in weight.

Stiff poles help move bass out before they can cut the line on the barnacles. A few split shots are

attached to the line six inches above the hook to keep the frisky baits down. The cork should position the shrimp just above the bottom.

Tidal Current Drift

With a long pole, shrimp can be flipped near visible cover and allowed to drift under piers or through vegetated areas from upstream. Bass usually rest facing the tidal flow current and wait for forage to move past. Bait will be swept into the cover, and if a bass is there, it will grab the bait. Try two or three drifts around any particular structure before moving on to the next one.

Bass will usually hit bait shrimp within a few minutes once a shrimp is in their habitat. If you find a bass, stay a while; there may be more. Fishing areas around piers will usually provide lots of action, especially around piers which are supported by a dense piling network. Feeding often occurs on the outgoing tide and again, on a lesser scale, on a rising tide.

Set the hook quickly once the bobber disappears. Bass tend to engulf shrimp without hesitation, so when a largemouth hits, swing the pole upward and bring the fish into the boat.

Slow Trolling

During slow times, such as slack tide, shrimp and other baits can be trolled behind a boat. A shrimp that is hooked conventionally behind its horns, however, will spin and not draw strikes. Two other ways of hooking are highly effective: One method is through the tail fan with a single-shank hook, which penetrates out before reaching the internal organs. They will look more natural when rigged like this.

A second shrimp rigging method is to run a #2/0 hook right through the mouth and out the top of the head near the horns. Bill Pickhardt uses this procedure because it prevents line twist while trolling along river banks. At Peace River, he maneuvers his boat to pull bait

shrimp along a four-foot drop which lies just out from the shoreline cover in many tidal waters there.

Baits can also be trolled along the grass that grows adjacent to wooden piers and other structures. Nearby deep water often helps attract tide-water bass to such areas, and depths of five to ten feet can be productive in waters that have medium to low visibility.

Fishing with shrimp for largemouth bass is probably the easiest method to use during the right months—and one of the most productive. I have found they catch bass in that portion of the St. Johns River between Palatka and Jacksonville and they are equally effective in the Apalachicola River tributaries of northwest Florida. Bait shrimp also produce in southern coastal waters wherever bass and ocean shrimp share the habitat for at least a month.

Tidal Influence

While hungry bass may be numerous during shrimp runs, an understanding of tidal influences is vital to angling success. Barometric pressure and tides both affect fishing. Tides cause water to move about and change in level, temperature and clarity. Tides also drain shorelines during low periods and sweep estuary forage organisms along in their currents.

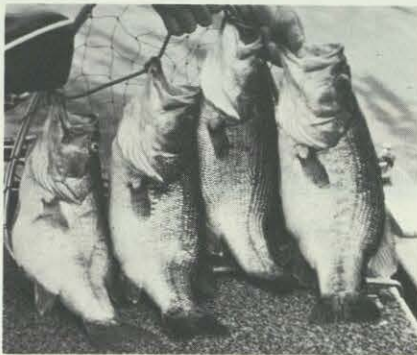
Falling tides generally offer the most productive tidal bass fishing. They force bait fish out of their hideouts into deeper water, and being weaker swimmers, they are less mobile than bass in fast currents.

Bass normally feed voraciously on a falling tide, until the current speed approaches zero; then, after a slack-tide lull, they proceed to feed on the incoming tidal current until the marshy flats are flooded at high tide. Feeding activity slows again near the high slack tide and generally stops until the tide is falling rapidly again.

Plastic worms resembling eels and snakes also fool their share of strong fighting bass in marshy river bends

until the tide has fallen to the level that mud banks and shoreline structures are exposed. Then, floating balsa lures, which are retrieved across shallow flats, can catch largemouths. As the tide continues to fall, anglers can switch back to plastic worms and probe deep outer bends of winding rivers.

Bass generally stay around whatever structures are available. Cuts where marsh areas connect with tidal creeks and rivers are prime foraging spots, and great places to catch fish. These run-ins often have congregations of baitfish, and bass tend to be there during outgoing tides. The same tide will leave fallen weeds along banks and mud flats near deep water which can hold fish; and bass can often be



Larry Larsen-Photograph

found on quick drops which give them a choice of depth, cover and forage just off shallow flats.

Most tidal river banks offer plenty of logs, stumps and eddy areas which provide good ambush points for bass to grab careless baitfish. An eddy can also be productive with current-swept baits on either an outgoing or incoming tide. Deep outer river bends are consistent on either tide, but the nature of the run just above and below it determines current speed during each tidal phase. A sharp bend immediately upstream from another bend usually slows the current at the downstream bend, while a long straight run generally speeds it up.

Tide Variations

Tributary tidal action varies

greatly from area to area. Tide tables for different coastal areas are compiled from known gravitational influences of the moon and, to a lesser extent, the sun. Gravitational pull is highest when the moon is closest to the earth and on a line with the sun. This extremely productive tidal phase, called a "spring tide," occurs during new moon and full moon phases. The highest and lowest tides will be experienced then. Less rise and fall is seen on "neap tides" which usually occur on the first-and third-quarter moon phases.

Tides occur approximately one hour later each day, but correlating published tables to a favorite river fishing spot by using the times for the nearest reference station is extremely difficult. Several factors, including water depth, width, freshwater discharge, wind and rain runoff, can affect given spots, so actual observation is the best way to determine a particular spot's time differential from the tables. Once this adjustment has been established for a particular area in the river, its tides can usually be predicted from the tables.

Most southern tidewater tributaries offer excellent big bass angling, and launching ramps are usually available. Florida bass weighing more than 18 pounds have reportedly been landed from the Withlacoochee, Homossassa and Suwannee rivers, while the Apalachicola, Peace and Crystal rivers reportedly boast largemouths weighing more than 15 pounds.

Brackish-water bass usually provide anglers with plenty of action. During my first trip to Nassau River near the Florida/Georgia state line several years ago, my fishing partner, Steve Hamman, and I caught 20 bass on a falling tide. While our stringer was anchored by only two six-pounders, largemouths up to 12 pounds have been caught from these waters. Additional trips to several tidal areas have convinced me that a typical day's catch for two anglers is often 10 to 20 fish. □



ART BIRO

From Landscapes to Wildlife



After years of exploring many art mediums and techniques, wildlife artist Art Biro of St. Petersburg has found his niche. Born January 10, 1953 and raised in Indiana, Biro's initial art interest was in drawing. He continued drawing through college, where he later studied painting at the Fort Wayne Art Institute. During his studies there, he painted with oils, acrylics and watercolors; however, he now prefers the results he achieves with watercolors.

As a youngster, Biro began his artistic career drawing landscapes. Also, being an avid hunter and ▷



outdoorsman, it has been natural for him to specialize in painting wildlife as his major subject matter. Biro particularly enjoys living and working in Florida because of the wide variety of wildlife found here.

A painting generally takes him "about a month" to complete, depending on the detail of the piece. Occasionally he works from photographs, but more often, he paints "from memory" and his own outdoor life experiences. The sensitivity and detail shown in his work depict an artist who appreciates the beauties found in nature.

—Paige Moody



BARRIER ISLANDS



Anyone who has ever flown in an aircraft along Florida's sinuous coastline has surely seen our coastal barrier islands. By day, stretching northward, southward and parallel to the shore, they are rimmed with the foamy flocculence of breaking sea waves. At night, those which have been developed and electrified appear like diamond-studded necklaces against the velvet blackness of the Florida coast.

These islands on Florida's east coast occur from Jacksonville to Miami and the west coast intermittently from Pensacola to Naples. They are the manifestations of coastal processes which began

thousands of years ago, and which continue today. These processes will continue far into the future, unless man intervenes. Barrier islands in Florida (and elsewhere) result from the interplay of geological, hydrological, climatological, biological and anthropological forces—in short from forces of the earth, sea, wind, Nature and man.

To see how this takes place, let us look at a typical coastal barrier, beginning at the bottom. The basement substratum of many barrier islands is composed of limestone or other lithified sediments which were laid down in shallow seas during Florida's continually emergent and

submergent geological history. Hydrological processes, which include strong currents which often run parallel to the shore, vie with incoming oceanic waves to deposit, scour, carry away, and redeposit sand grains and other beach-forming sediments on the basement substratum.

Eventually sand bars form and rise above sea level or the beach itself progrades (extends) offshore, and if sufficiently stable, a bar-built or prograded barrier island is born.

Longshore currents carry sand and sediments along its length and waves continually deposit sand upon, or carry particles away from the newly formed beaches. These

NATURE'S DYNAMIC SAND CASTLES

Text and Photographs
By Dr. Robert H. Gore

processes of sediment build-up (accretion) or removal (erosion) continually shape a coastal barrier island, causing it to move slowly and change shape, like some gigantic geological "amoeba" along the coast.

Where two islands meet they may accrete and form a larger one. In some cases, smaller islands may be sacrificed and their sediments added to other islands nearby or far away. The entire formational-erosional sequence is termed the "sand budget." Think of it as an oceanic force making deposits into a terrestrial savings account. Hydrological forces deposit and withdraw sediments from the barrier island "bank." As long as the net deposits exceed withdrawals, the island account will not be overdrawn. But when withdrawals—in the form of storms, highly erosional currents and wind processes, plus secondary debits caused by man's interference—become excessive, the island's sand account dwindles and eventually disappears. For persons living on a failing barrier island, the results may prove catastrophic.

Climatological forces also play an important role in barrier island maintenance. As the island rises higher from the sea and more sand becomes deposited, winds begin to shift and shape the particles until sand dunes begin to form. These dunes then may migrate toward or away from the foreshore, depending on several factors, including dune height, amount of sand and the



Sea oats (*Uniola paniculata*) are valuable plants for stabilizing sand dunes. They naturally occur along most of the Florida coast where sand deposits have built up, and where man's activities have not destroyed them. Their extensive root systems help bind the loose sand particles together.

vegetational cover present. In addition, dunes may also migrate slowly parallel to the beach, merge together or gradually separate as wind and waves act on the available sand budget. At this point, Mother Nature may step in to provide some stability in the form of dune and barrier island vegetation.

Sandy beaches are inhospitable places for most life forms. Organisms must contend with waves, highly saline water, osmotic

differentials, shifting substrates, blowing particles, lack of fresh water and temperature and humidity extremes. Most of these conditions alone are not problems for many animals, including humans, because when conditions become too severe or limiting, they can simply move. This is not so for plants, as they are usually firmly tied to the substrate and require fresh water at some point in their life cycles.

Thus, barrier island vegetation initially consists of plants known collectively as *pioneer species*. These include railroad vine, sea oats, sea ox-eye, sea daisy and several tough grasses, all of which colonize the virgin beaches. It is no coincidence that all these forms are capable of withstanding high sand temperatures, brilliant sunlight and low or nearly absent freshwater supplies. More importantly, these species all have tough and extensive root systems which are able to ramify throughout a dune. Their thousands of tiny rootlets help hold shifting sand grains together and soon an unstable dune becomes a stable dune, its seaward and landward surfaces covered with tough, sand-binding plants.

Stabilized dunes soon become colonized by secondary *nonpioneer species*—cabbage palms, saw palmettos, sand oaks and sea grapes. These are soon followed by plants of the coastal hammocks—Jamaica dogwood, gumbo limbo, live oak, maple and sweet bay. As the water table beneath the surface of such a barrier island accumulates and rises, ▷

more and more forest-type plants and their associated understory species are able to become established.

Eventually, the barrier island ridge—the highest portion of the island—may support several different vegetational biotopes. These can range from xeric (desert-like) high-island communities dominated by palms, palmettos and cacti, to more humid assemblages dominated by green-leafy hardwoods. Fringing the back barrier area, on the lagoonal side facing the mainland, mangrove forests step stilt-legged out into the intertidal zone. Just offshore in the barrier shallows, large seagrass meadows are found with their myriad forms of invertebrate and vertebrate life.

From a wave-washed sand bar, a small, low island can grow to become a large, elongate, high island capable of supporting a dense subtropical or tropical tree canopy. These changes attract many terrestrial species, including man. There is considerable evidence that early American Indian tribes such as the Calusa, who lived in southwest Florida, and the Tekesta (Tequesta) and Ais who lived in southeast Florida, utilized barrier islands for

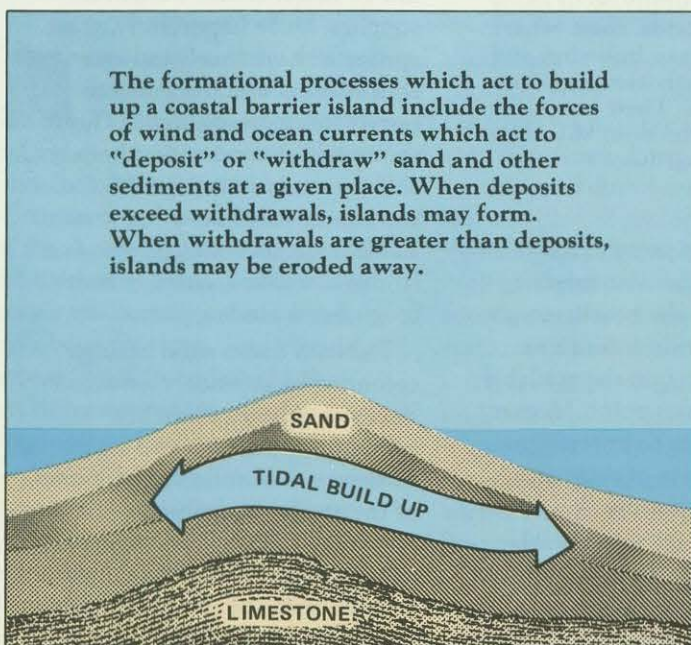
habitation and as places to gather food.

Many elongated man-made middens—six to eight feet high and composed of oyster, Venus clam, whelk and coquina shells—are known to exist on many of Florida's barrier islands from the Indian River area southward on the East Coast and along most of the lower Gulf Coast. These are dwarfed by a few astounding mounds of whelk, oyster, tulipshell and other molluscs, some of which rise to

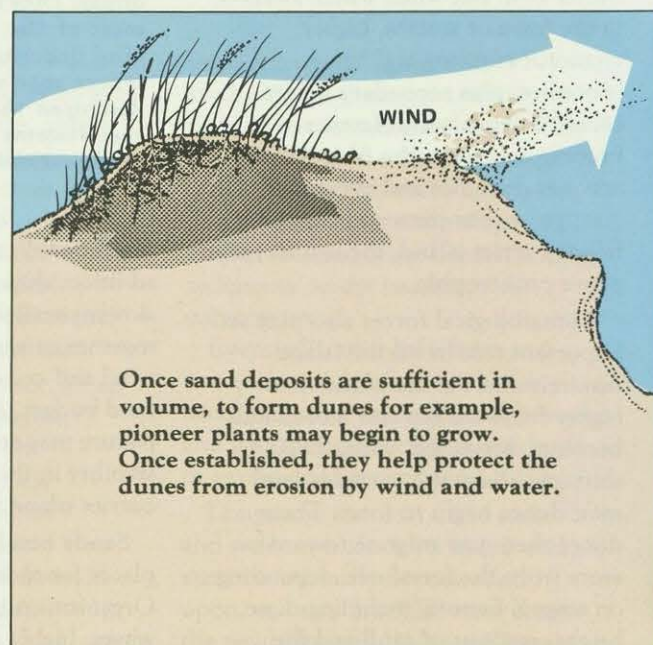
more than 30 feet in height along the southwest Gulf Coast, particularly in the Collier County area. These kitchen garbage heaps (for that is what middens are) soon became covered with rich, black dirt and loam which eventually supported a typical midden-association of hardwood hammock trees. Thus, early man aided the stabilization of some of our coastal barrier islands, albeit indirectly, by adding shell strata to sandy sediments. Centuries later,



Railroad vine, a member of the morning glory family, is a tough pioneer plant which is among the first to colonize sand dunes. There are several species, all of which have rounded, drought-resistant leaves. They help keep sand particles from blowing away in the wind.



The formational processes which act to build up a coastal barrier island include the forces of wind and ocean currents which act to "deposit" or "withdraw" sand and other sediments at a given place. When deposits exceed withdrawals, islands may form. When withdrawals are greater than deposits, islands may be eroded away.



Once sand deposits are sufficient in volume, to form dunes for example, pioneer plants may begin to grow. Once established, they help protect the dunes from erosion by wind and water.

immigrants from the Old World would be thankful for this stabilization as they rode out severe hurricanes and rapidly-rising storm tides on the tops of many of these middens. In addition, the rich soil was perfect for growing many types of crops, including vegetables, pineapples, citrus and other fruits.

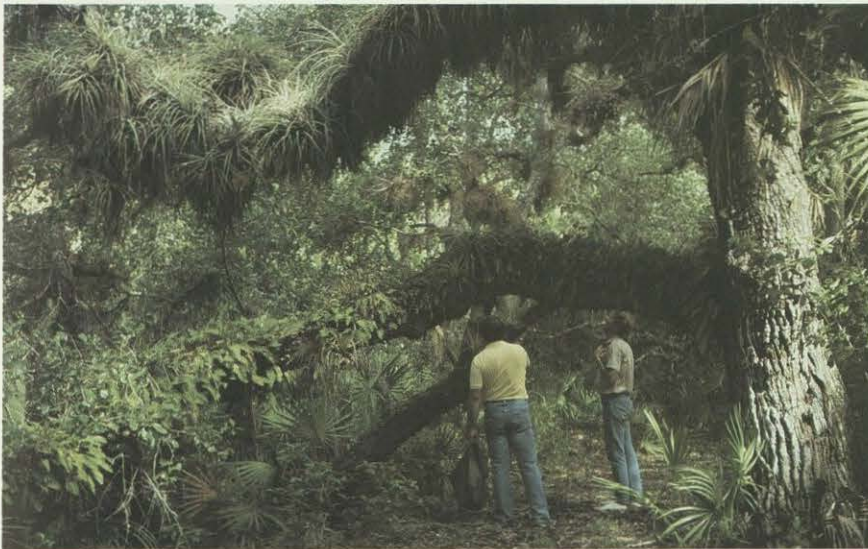
Today, modern man also adds materials to and affects coastal barrier islands, but in a drastically different manner. Now, innumerable high-rise

condominiums perch on the seaward side of the dune line, their concrete feet becoming wet at every tidal cycle. People living in single-family residences seem to vie with one another to see who can remove the most native, sand-binding vegetation and replace it with tenuous, salt-intolerant exotics which are totally incapable of binding loose sand. A sad and very noticeable consequence of this has been the loss of much of the beaches which originally formed Florida's coastal barriers. Now,

with erosion increasing almost daily, more and more beaches are being carried away—despite the futile and often foolish attempts by property owners and well-meaning coastal engineers to dam it up or slow it down by using breakwaters, sea groins, riprap jetties, concrete bulkheads and sea walls. Given the powerful and intense interplay of the sea and weather's hydrological and climatological forces, these efforts are stop-gap at best.

Continuing erosion by sea currents and wave reflections off sea walls; formation of dune "blowouts" and other breakdown forces caused by wind; removal of stabilizing vegetation either through erosion, attrition or bulldozing; and the erection of buildings and other structures too near the shore all place severe demands on the sand budget. Soon the sand account is bankrupt, and when Nature comes in the guise of a hurricane or tropical storm, she can permanently close the account.

There is something about living or being on an island which appeals to almost everyone, and as users of Florida's coastal barrier beaches, we have a choice as to how they will be utilized. Do we want a concrete barrier such as that which presently ▷



It may take centuries for a barrier island to become forested by green leafy hardwoods, which may grow on the higher elevations if sufficient humidity is present. Note the thick growth of bromeliads on the oak tree.

BACK BARRIER AREA (LAGOONAL SIDE)

The lagoonal side of a barrier island may support colonies of mangroves, which grow in the intertidal zones. Many animal species may live all or part of their lives in this zone.

BARRIER ISLAND RIDGE

Stabilized dunes or islands may have a central ridge of higher elevation, where nonpioneer species can grow. These may be xeric biotopes (palms, palmettos and cacti) or hardwood biotopes (sand oaks and other species), depending on available humidity and ground water levels.

BEACH AREA (SEAWARD SIDE)

The seaward side can be stabilized by such tough, sand-binding, salt-tolerant species as sea oats, railroad vine, seagrape, sea ox-eye and other plants which are able to colonize this sometimes hostile zone. Here, wind and wave forces may act to build up or tear down an island.

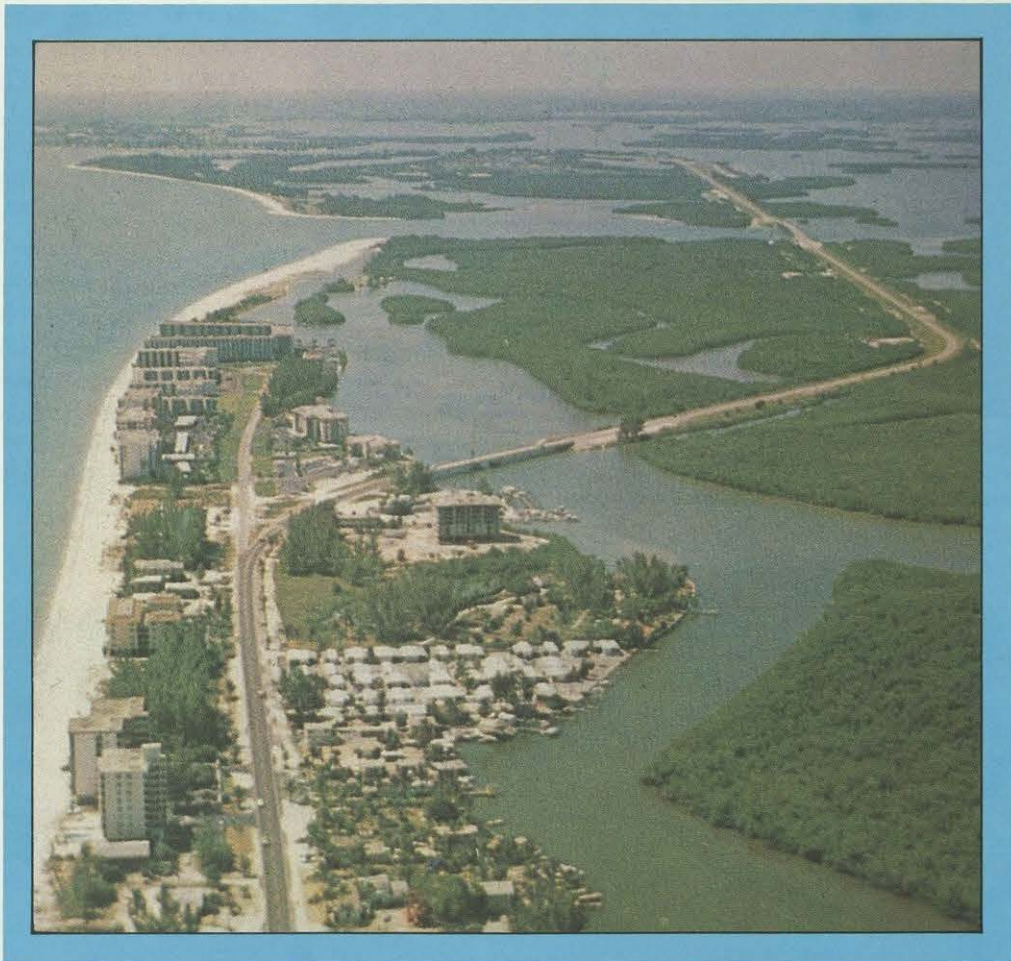


exists on Miami Beach; or a highly eroded and devastated dune-line barrier like that near Pensacola? The choice is ours.

Coastal barrier islands are important in many ways: They provide recreation on their beaches, safe waters for mariners in their lagoons, sport and commercial fisheries in their nearshore grassbeds and storm wave and tide protection for the coastal mainland. No coastal barrier island will remain unchanged, however, for they are dynamic physiographical entities which are shaped, maintained and destroyed by continuing

everchanging coastal processes that have been operating for millennia. Although humans are the latest force which is impinging on these islands, one can only hope that we will not be the final one. □

Editor's Note: Robert H. Gore, Ph.D., lives in Naples and works on contract as a coastal zone management specialist for the Collier County Department of Natural Resources Management. He earned his Ph.D. in marine science at the University of Miami School of Marine and Atmospheric Sciences.



Many of Florida's barrier islands have been colonized and developed by humans. Condominiums, houses and other man-made structures now displace natural vegetation and many animal species' habitats. Hurricanes are capable of spawning winds and currents strong enough to destroy not only the surface structures, but the island itself.



DEEP WITHIN THE WATER PLANET

Text by John Waters Jr.
Photographs by Andrew J. Peterson

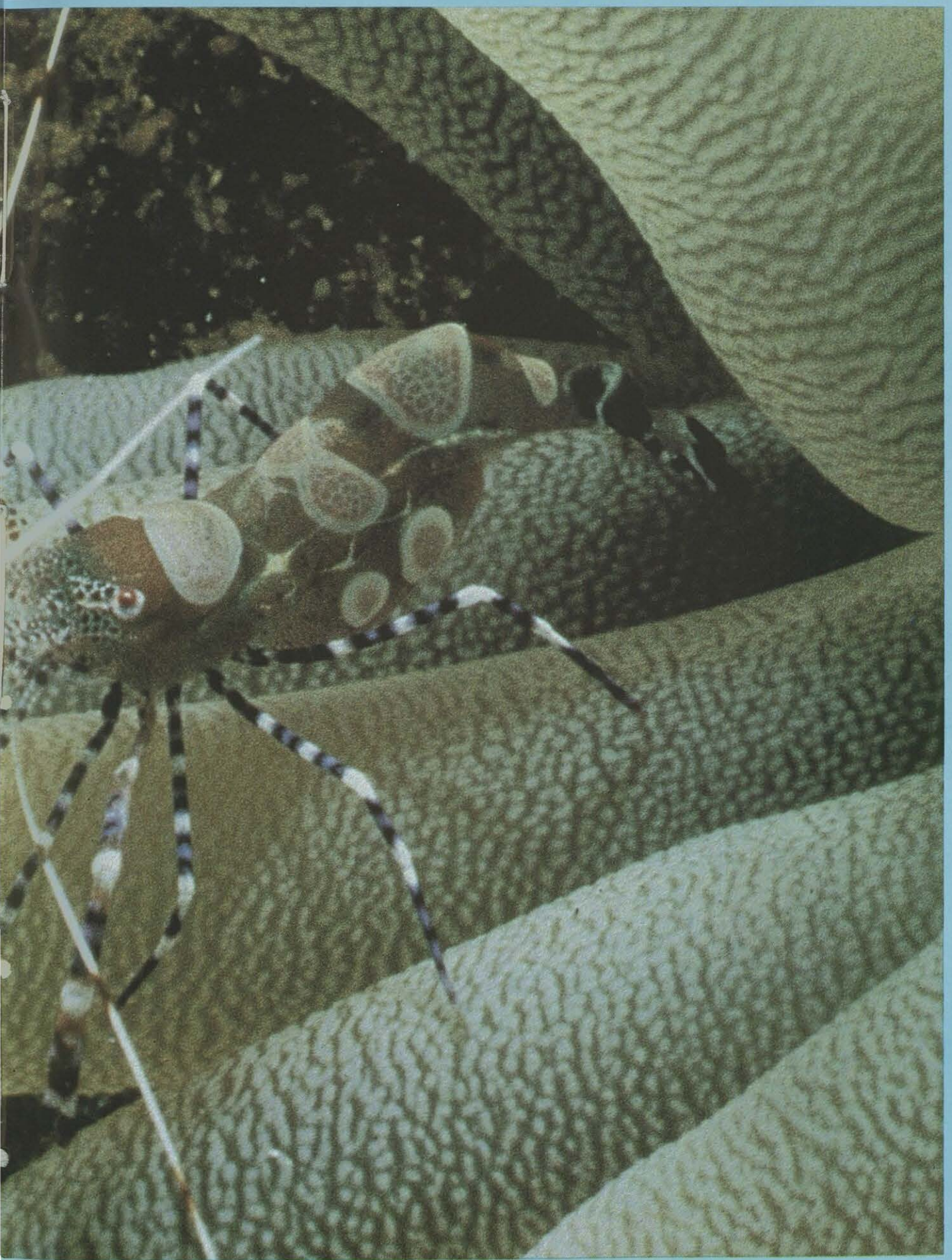
The sea surrounding most of Florida's ancient coastline is filled with wildlife; much of it still remains a mystery to science. As humans learn more about the stars, the oceans remain the last frontier on Earth. Perhaps no other places are richer in the diversities, forms, colors and textures of life than those found in and around our state's natural coral reefs. Here in the often shallow depths of the sea live such varied creatures as fish, mollusks, moss animals, brachiopods, starfish, sea urchins, arthropods, anemones, corals, jellyfish, worms, sponges, and single-celled plants and animals. Even mammals sometimes dwell within these strange and beautiful ecosystems. ▷

A photograph of a coral reef. In the foreground, there is a large, light-colored, textured rock or coral structure. Above it, the water is dark and contains various types of coral. A colorful fish with orange, white, and black stripes is swimming in the water. The background is a dark, textured surface, possibly more coral or a cave wall.

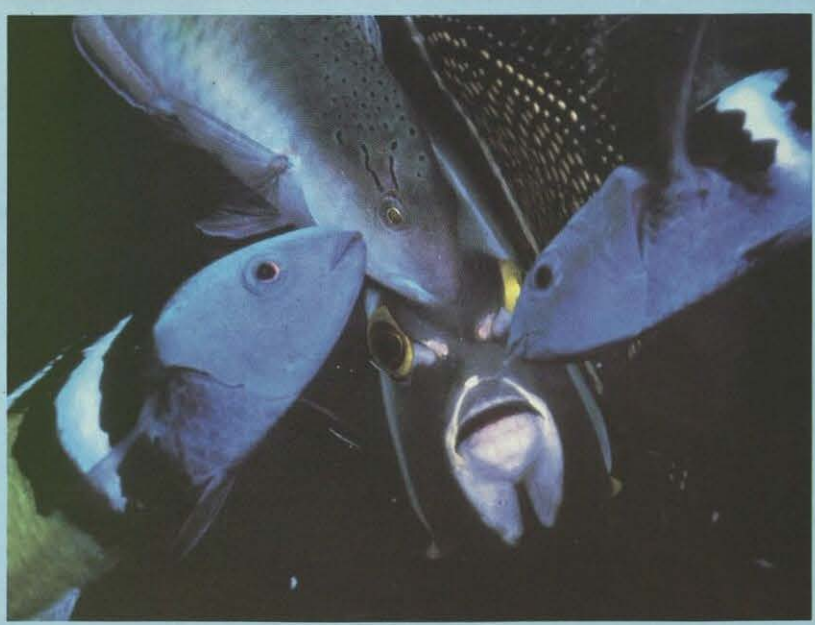
Members of all major phyla of living animals can be found in the vicinity of our reefs, and most of the known chemical elements (either in pure form or in compounds combined with each other) that make up our universe are dissolved in the water surrounding these luxuriant habitats.

Along our more than 8,000 miles of shoreline edging the land and Florida's many bays, sounds or other tidewater areas

are 13 major freshwater river deltas which discharge some 60,000 cubic feet per second of water directly into the sea. The fresh water flowing through these rivers, for the most part, originates from the sea. It begins there as sun-heated evaporation processes form water molecules which in turn form clouds which then collectively drop an estimated average of 150 billion gallons of rain on Florida each day. ▷



Reefs support abundant life, in both numbers and forms, such as the small fish which form an important link in the food chain for larger species, many of which feed man. Some species, such as the blue parrotfish (bottom at left) feed on seaweed and living coral.

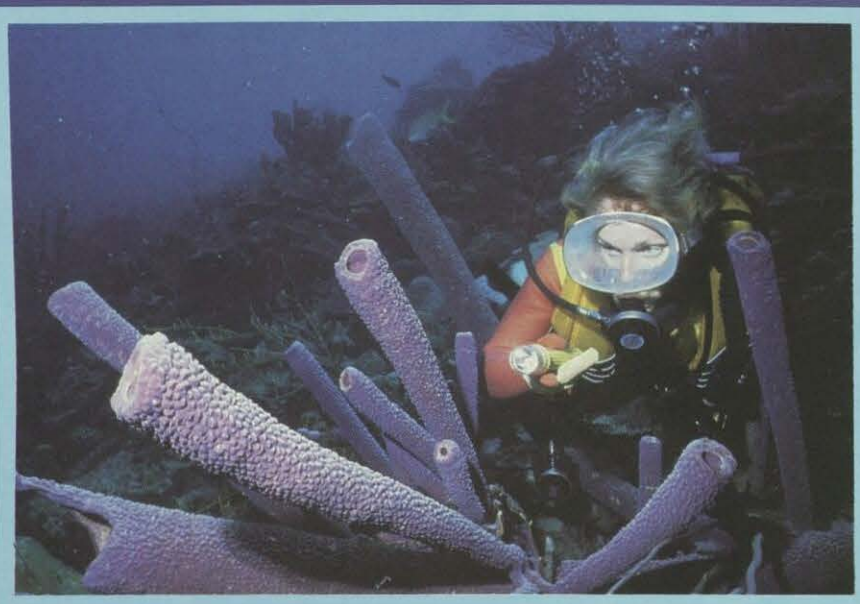


Between the evaporation and return of this water, many happenings occur.

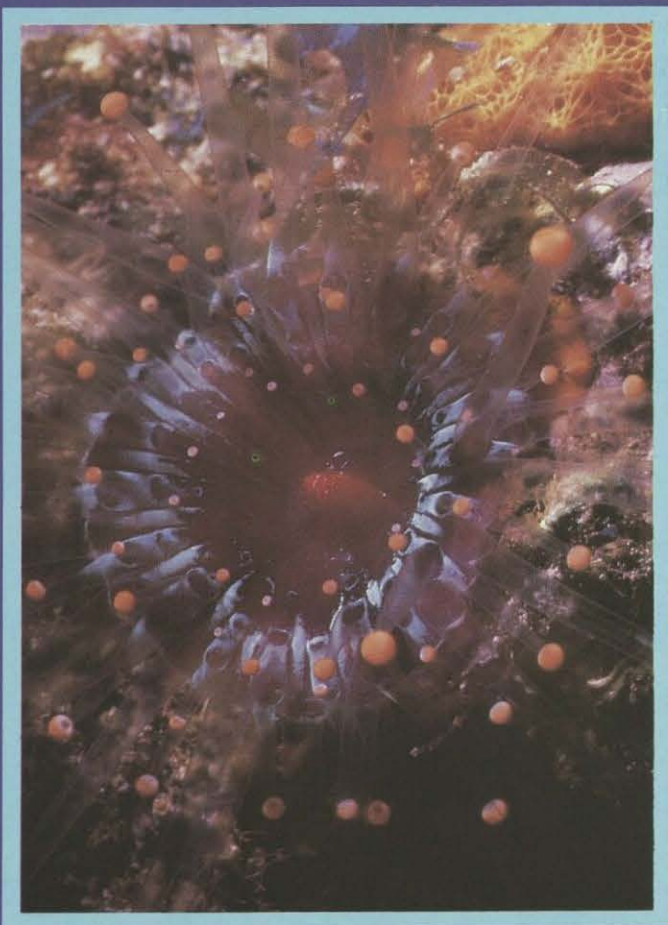
Along this circuitous hydrologic route, life-giving fresh water is used by plants, animals and ourselves. The rain enters our lakes, streams and groundwater reservoirs, often taking with it substances that destroy life—pesticides from our farms, silt from our cleared acres, petroleum poisons from our highways and parking lots, nutrients from our septic tanks and wastewater systems and living bacteria and viruses from our population. The trade is imbalanced—the sea gives us her purity and receives our impurities in return.

Although we often speak of *fresh water*, *brackish water* and *salt water*, the essential ingredient is the same fluid. We can arbitrarily define what is one kind or the other, for example, by measuring the amounts of salts and other dissolved minerals in the fluid, and we can draw lines on a map to distinguish between the various water zones; however, one type gradually becomes the other in the Earth's hydrologic cycle. The magic of interactive physical forces—including heat, molecular motion, condensation, precipitation, gravity and cohesion—each assist with making the great cycle continue minute by minute, day by day, as it has for millennia. Thus, Florida is intricately dependent on the sea, and the sea is intricately impacted by Florida's freshwater systems.

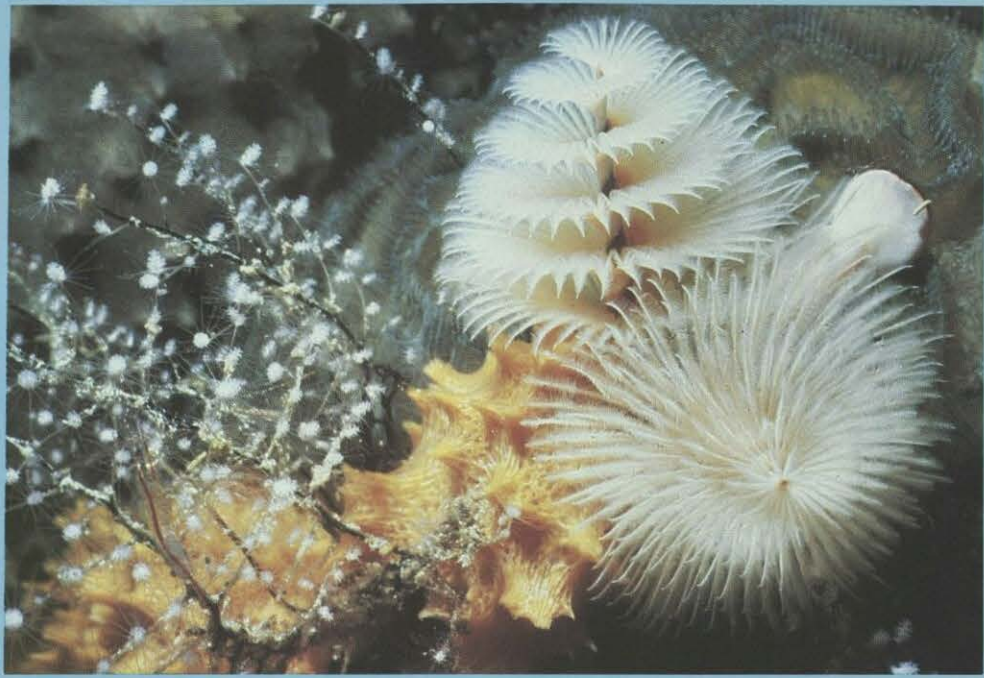
Our coral- and limestone-reinforced peninsula and the seas around it are so complexly interconnected that it is impossible for us to realize the fullness of this intricate connection. Only through our senses and powers of reasoning can we begin to understand and compare the dynamic interrelationships of man's building processes and those of living colonies of corals. We build our things quickly, but the sea takes enormous lengths of time to build her coral reefs. We grow many of our crops in only a few months, but the sea spends years—sometimes centuries—growing her crops of colorful corals and the myriad of ►



Florida's coral reefs are strange and beautiful places where many of the mysteries of the universe are still to be understood. As humans strive to reach the stars, the sea remains the last frontier on Earth. Perhaps no other places on Earth are richer in the forms and diversities of life than our reefs.



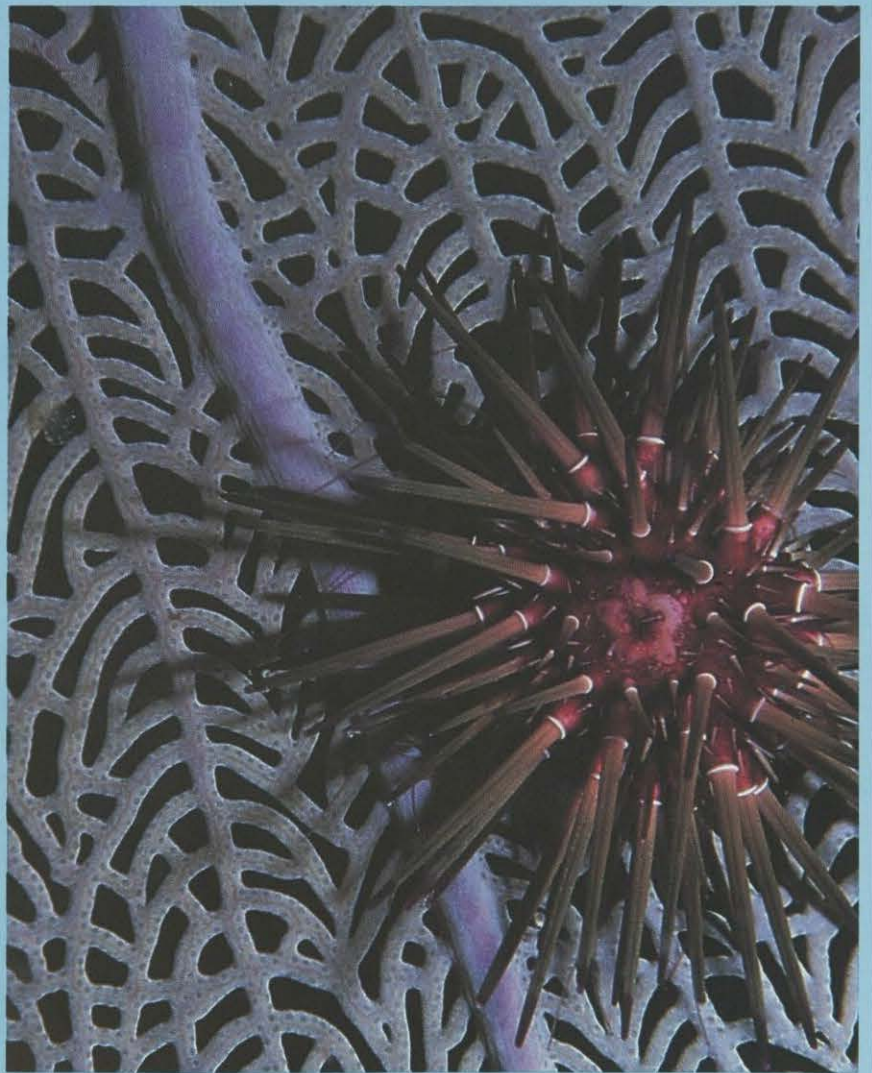
Appearing more like colorful, decorative flowers, sea anemones are animals. They attach themselves to rocks and corals, where they use their delicate tentacles to capture food.



life which becomes part of a reef ecosystem.

Natural processes have been at work since the Earth was formed to bring about the present make-up of land and sea, but humankind has the capability quickly to destroy much of the products of these processes—and the marvelous genetic diversity of yet uncounted living species which have adapted to dwell in the various niches and corners of the sea. Uncontrolled, our population's habits and mistakes have all the power necessary to change the contents of the sea from healthy to unhealthy and from living to nonliving. Our goals as conservationists and custodians of our small part of a small planet, however, include the nurturing and preservation of the healthy and living. We realize now, more than yesterday, that we have an interest in the sea's life forms. □

At the top, on the right, two feather duster worms display their tentacles. Although not true gills, these structures do function in respiration. They also gather food organisms, consisting mostly of plankton. At right, a sea urchin walks across a sea fan, one of many coral species.



WILD GENE

DIVERSITY AND PRESERVATION

A Single Gene Could Alter the Future of Humanity.

By John Waters Jr.

We live in a time when wildlife species are literally becoming extinct overnight. Every day of our lives, there are fewer kinds of living things on our small planet than there were yesterday. Extinction is happening so fast to Earth's wild living resources that some species become extinct before much more is known about them than a brief description of their appearance. We look, we find, we give it a name, then it disappears forever. Human population growth and extensive alteration of the planet's surface are direct and significant causes.

More than a thousand of the world's animal species are bordering on extinction; a few merely because of some people's habits of wanting exotic things. Many species of birds and reptiles are being caught wild and sold to a booming worldwide pet trade. Colorful and rare parrots are robbed from their nests, snared by their necks from roosting trees and trapped by any means possible, then bound with tape and secreted into such smuggling containers as the inside linings of coats. Most of them die before making it to retail pet stores, and of the few survivors, many die in cages. The same fate faces various snakes and lizards. In Florida, for example, the eastern indigo snake has become threatened in part because of its gentle nature and its consequent popularity as an unusual pet.

Extinction of both well-known and little-known animals and plants is happening at this very moment, but because most of humankind depends so much on the plant world for major food sources, the concern for the loss of plants seems to be greater in many ways. Plants are also at the beginning of the food chain for most animal life.

There are many more species of animals than plants—about an 11 to one difference—so the number of plants available to lose is less. Already, scientists are predicting that by 1990, about one plant will become extinct each hour of the day. They predict that by the Year 2000, some 40,000 plant species living today will be extinct. We can expect the list to include valuable food and medicinal plants.

From a few thousand available human food plants, our hungry world depends on a mere two dozen major domesticated varieties. Because this relatively small number is so heavily utilized, it is easy to misunderstand the importance of the thousands of other food plants, many of which are cultivated or still harvested from the wild in only very limited geographic regions. A rich variety of wild, edible plants are found in tiny areas of the world, and many of them are facing the immediate threat of extinction. Of the few major food plant varieties, all of these human-selected grains, legumes, tubers, fruits and other edible plant parts were once wild, rather than domestic.

Americans eat and enjoy a number of food plants that originated in diverse parts of the world. The wheat, rice, barley and rye we use for a multitude of meal items come from Asia. The potato comes from Peru, along with the tomato. The soybean, which is used in the United States primarily as a livestock food, originated in China. Only four major edible food plants originated in North America—the black walnut, pecan (and related hickory nut), Jerusalem artichoke (a wild sunflower species) and most important of all, modern *maize*. Most of us call it *corn*. A suspected ancestor to modern *maize*, *teosinte*, apparently was native to Central America. ▽



John Waters Jr.-Photograph

Americans enjoy a rich variety and abundance of foods. Most of them originated outside North America. What we eat today are products of deliberate human selection, cultivation and domestication of wild plants. These human activities, however, have had the potentially disastrous result of limiting genetic diversity in some of our most important varieties.

For centuries, the American chestnut provided a significant food source to Native Americans, and more recently, to modern Americans. But now, it is almost destroyed. A blight, unintentionally imported when exotic chestnut trees were brought here from China, has killed most of the American chestnuts. The search continues for immune American chestnut trees from which, it is hoped, a new blight-free selection can be made.

All our domestic livestock and poultry varieties also have been selectively bred, over a few thousand years, from species which once roamed free. Sheep and goats, cattle, hogs and chickens all have wild ancestors. North America contributed only the wild turkey to the original stocks of wildlife which later became our major domesticated varieties. The other wild ancestors of America's domestics originated mostly in Asia and Europe.

It is very easy for us to ignore the fact that somewhere at this very moment a species is being lost for eternity. More than likely, it is something we've never even seen, much less know a use for. We are, after all, a society concerned with the *usefulness of everything*. What good is it, some would ask about a little-known wildflower that grows only in some distant South American rain forest or along a Florida stream bank we've never walked along. It's just as easy to find no readily apparent benefit in a tiny fish that lives only in one small Florida swamp or a little bird that nests along the coast.

Usefulness is not always readily apparent, but,

nevertheless, our daily loss of so many species of wild things is very significant. Probably, the full significance of these losses will never be fully known, as you cannot measure the value and usefulness of something that no longer exists. And when only a single living species becomes extinct, its genes die with it. *It is these lost genes that are most important to the future of humankind.*

It is genes that make the great differences between deadly nightshade and two edible members of its family—the potato and the tomato. Genes make the differences between corn, wheat, rye, bamboo, sugarcane, rice, barley and the tall coastal Bermuda grass which grows alongside Florida's interstate highways. All these plants are grasses, but each has a unique set of genes which makes it quite different from all the others.

The rose family also has great differences among its many members. Peaches, apples, plums, blackberries, cherries and other favorite fruits are roses of sorts. Genes make each of these unique.

Although we have only recently begun to understand the most basic workings of the genetic processes of life, already we know that *genetic diversity* is a key element in the scheme of life on Earth. No way is yet known to count and classify the total different genes which live in Earth's thousands of living plants and animals, but it must surely be in the billions or perhaps, trillions. And a single one of these extraordinarily tiny bits of living matter, if either lost or controlled, could change the future of humanity.

Our manipulation of genes had already been

practiced long before modern science offered a reasonable definition of what a gene might be. The manipulation first began when early humans gathered wild food plants and began to keep captive animals. These activities had the significant action of *selecting certain genes* from all that existed. Over eons of time, this process converted a wild grass which had only a few tiny kernels of grain into a domestic grass which produces foot-long ears of corn on the cob, for one example. Similar selection processes have given us all our present domesticated plants and animals, and the process continues daily.

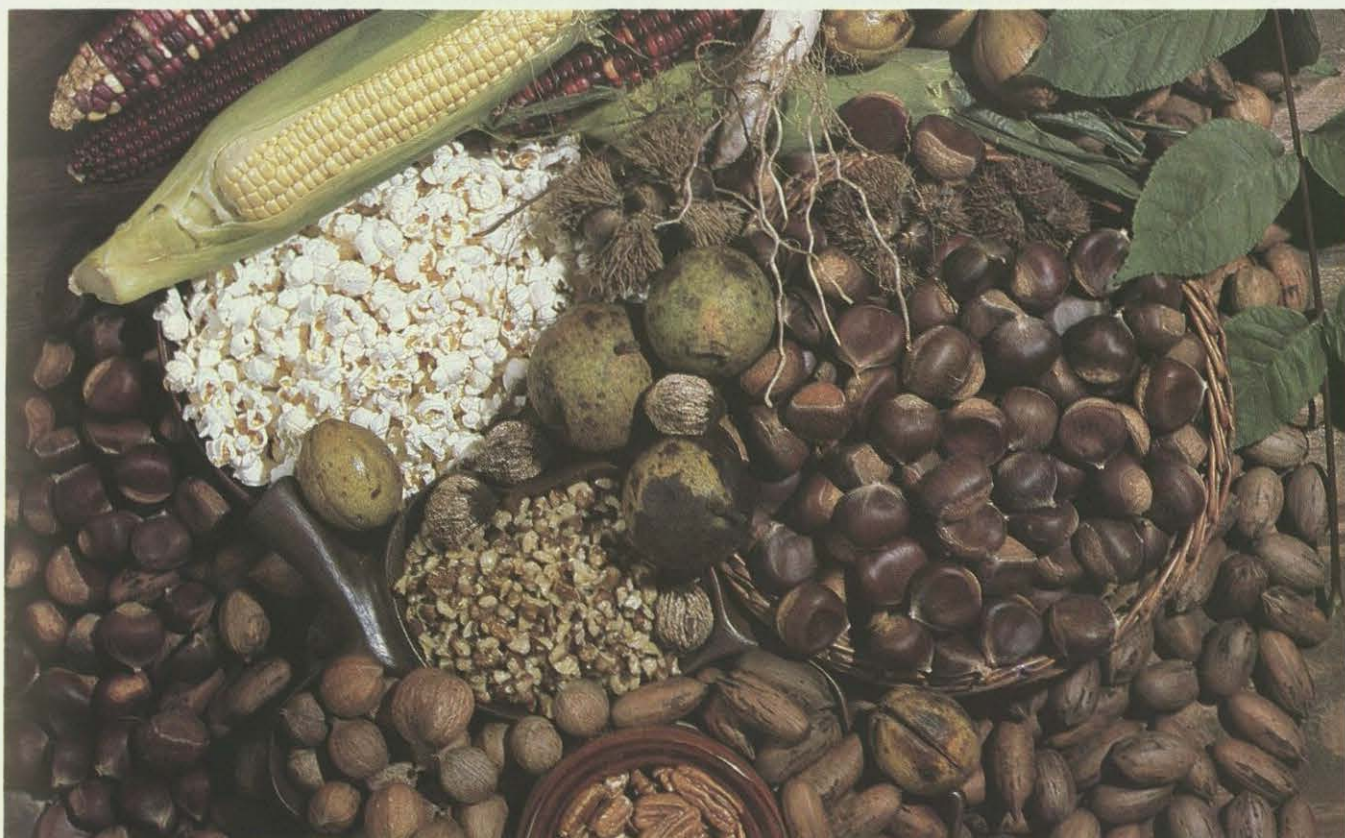
Corn has been so selected by human intent and deliberation over the centuries that it has completely lost its ability to survive in the wild. It is a plant that truly has a symbiotic relationship with us; unless it is planted by hand or machine, corn will not survive. It is true, of course, that a few kernels might sprout from a harvested or abandoned corn field, but in a year or two, none will be found growing wild. It must have human help to exist.

With such efficient food plants as corn, it is easy to feel secure in the false idea that we have mastered a wild thing, improved it and made it ours forever. However, the very process of domesticating corn has limited its genetic diversity and placed it in a most precarious position. Now, there is less genetic diversity in corn, because of human selections, than before it became

domesticated. A mere 50 years ago, there were hundreds of genetic varieties growing in the United States, but today there are only a few dozen. Many genes have been lost as a result of this process of concentrating only on a small number of varieties which best suit the cultural methods of our technological agriculture.

There is a distinct weakness in a population which does not have genetic diversity. Again, corn recently illustrated this truth when a widespread blight hit most of the United States' corn crop in the late 1970s. In one year of the blight, half the country's crop was destroyed in a matter of days. All the affected plants had been selected from genetic lines which had a single common ancestor which did not have immunity to a particular blight organism. This limitation in genetic diversity resulted in an unexpected, near loss of a food item on which we greatly depend.

Bioengineering techniques already exist to do marvelous things with living genes. These techniques, many of them only a few years old, promise to give us a multitude of new and important developments. The expectations of the future include new treatments for human illnesses and diseases; better yielding, insect-resistant food crops and perhaps new and useful forms of life. These are but a few of the possibilities of genetic engineering. The techniques already exist to do many of these things, and what is most needed now are the *genes*. ▷



Only four of the world's major food plants originated in North America: maize, black walnuts, pecans (and related hickories) and the Jerusalem artichoke. The American chestnut, which was once a staple to Native Americans and to Europeans who later settled here, has nearly been destroyed by a blight unintentionally imported with Chinese chestnut stock earlier this century.

They are the basic raw materials.

We do not yet know which of all the countless genes are the most useful ones, but we do know that in the past the most beneficial (and sometimes most detrimental) ones have often been found in the most unexpected species. For example, penicillin, the world's first mass-produced antibiotic, was first found in a common mold. The particular mold species is very similar to a species many of us have seen growing on Florida oranges that were left sitting around too long. Because of penicillin's particular genetic composition, it can destroy certain disease-causing organisms.

It is genetic diversity which gave us the purple foxglove plant—the first source of digitalis, a medicine long used to treat ailments of the human heart. It is genes which make the opium poppy a source of the world's longest used and most effective painkiller. And the future offers the possibility, through genetic manipulation of this species, for removing its socially destructive addictive properties while retaining its benefits to humanity.

Diabetes mellitus, one of the most common and disabling disorders in America, may soon be conquered as a direct result of genetic engineering. Through the techniques of transplanting specific individual genes from one organism to another, medical scientists are finding a way which promises to cure this disease. And similar genetic research and engineering is being done on other human and animal diseases.

A wild yam which grows in Mexico, *Discorea*, has certain compounds known as saponins which allow pharmaceutical manufacturers to make semi-synthetic hormones (steroids) which are used to treat rheumatoid arthritis and other ailments. A shrub which is native to India, *Rauwolfia*, has been used for years to obtain natural reserpine, a drug used to treat high blood pressure. Although reserpine can be synthesized in the chemist's laboratory, most pharmaceutical houses still use the plant as the source of this drug as it costs less to obtain it from a natural source than to manufacture it artificially.

Quinine, used to treat malaria, was first extracted from the *Cinchona* tree, another Peru native. Although this drug also can be synthesized, there are some strains of the malarial protozoa which do not respond to treatment with the synthetic forms, but will respond to natural quinine.

Common aspirin was first made in 1899 by a German chemist, but it had its beginnings with ancient cultures (including the Greeks, Romans and American Indians) who used a similar analgesic for external use, consisting of an infusion of willow (*Salix* species) bark. The search for a form of the active ingredient, salicin, which could be taken internally, led to the development of aspirin in the laboratory.

A surprising number of drugs used to treat human and animal illnesses and ailments still come directly from plants, and plants still have many unlocked secrets and untested possibilities. For example, the active ingredients of the common periwinkle, (*Cantharanthus*

roseus) an exotic plant originally from Madagascar, is currently being used experimentally to treat such diverse illnesses as Hodgkins disease and childhood leukemia. This flower can be found growing wild in vacant lots in many parts of Florida and it is used by some gardeners as a bedding plant.

There are some 200 species of the evening primrose (*Oenothera* species), some of which contain a combined polyunsaturated fat and essential fatty acid, *gamma-linolenic acid* (GLA), which is being used to treat diseases of the arteries, eczema and arthritis. Among the many species of this inconspicuous plant, some of which grow in Florida yards and fields, there is a wide difference in the amounts of GLA found in them. Similar differences in many closely related species and subspecies are known to occur for many other plants, and this is why it can be so important sometimes to save just one of them.

There are many uses for individual genes, and more reasons are now known than ever for each of us to help preserve Earth's rapidly disappearing genetic diversity. Active conservation of living things is a way all of us can help do this. When a species is saved, its genes are saved.

The first government-sponsored refuges and earliest soil conservation efforts were directed at conserving the visible things—scenic beauty of the forests, condition and usefulness of soils, declining populations of ducks and other game animals and such natural wonders as geologic formations and aquatic systems. There was one idea in these early efforts, however, which remains as important today: *the idea of saving something for the future*. Today, we are ultimately concerned with saving the genetic diversity of the species for tomorrow's world.

We can each do our share in the urgent efforts to save wildlife from extinction. Living in a democratic nation, we can be active in the political process, join private conservation organizations, support public conservation agencies, learn and spread the word. Prior to their habitat being destroyed by a bulldozer, we can act to transplant rare plants and animals to safe places where they will not cause detrimental impacts. We can then care for and propagate them. We can become active by working with gene banks, and when we purchase living things—especially exotic pets and ornamental plants such as cacti, succulents and orchids—we can confirm they are domestically raised and not stolen from the wild.

The future promises great and far-reaching benefits to humankind which are expected to be possible because of the living genes we conserve today. Therefore, it becomes more imperative than ever that we actively conserve every living species possible, in every little niche on this marvelous planet. As so many of life's forms occur in small populations found only in very limited areas—our own back yards, the small wetland at the edge of town or the future site of a new branch of the city—one tiny, seemingly insignificant spot could hold one of the genes that would benefit the world. □

Zea mays

The American Cereal Grain

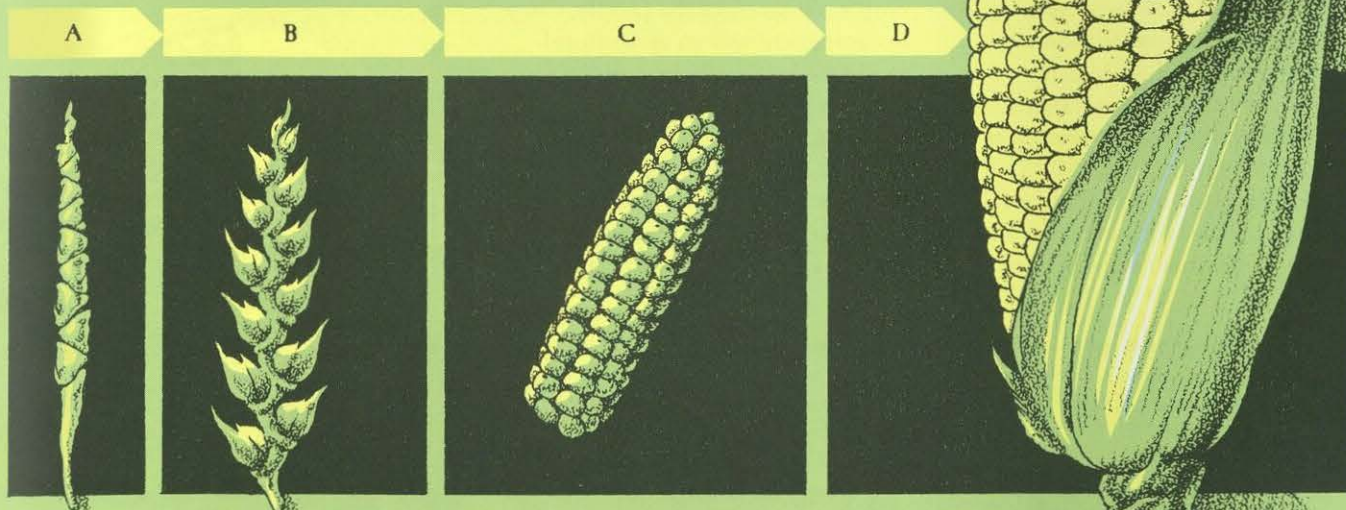
There is some argument among plant experts about how modern maize (*Zea mays*) came into existence; however, no one disagrees that this grass's high-energy, high-protein seed has made a very significant contribution to the world food supply. In America, a large number of common supermarket items are made from maize: corn oil, corn meal, corn starch, corn sugar, hominy, grits, corn flakes, popcorn, creamed corn, kernel corn and corn on the cob. And it is a primary food for all varieties of livestock which convert it to meat, eggs and milk.

Most plant geneticists now believe modern maize was developed by Native American agriculturists from a perennial wild grass, *teosinte*, which still grows in some regions of Mexico. Most of the unwritten history of maize indicates it was first selected and grown, probably, in Central America. This apparent wild ancestor of the modern, tightly husked, multi-kerneled, single-stalked corn has no resemblance to

modern corn. Teosinte is a bunch grass which has multiple stalks originating from one crown and a seed row that is but a single row of six to 10 hard-shelled seeds.

There are other differences too, between teosinte and maize. Teosinte is perennial and grows from the same root each year, but maize is an annual and must be newly planted each year. Teosinte seeds readily loosen and fall from the plant, but maize seeds must be stripped from the cob. The seed dispersal mechanism of teosinte allows it to grow in the wild, but maize's tenacious grip to the cob prevents it from surviving in the wild. An ear of maize may fall to the ground, but when all the seeds sprout, none will make it because of each seedling's competition with the others. These differences of seed-holding characteristics and perennial versus annual growth habits are due to different genes.

All the Earth's domestic cereal grains have the desirable character of their seeds adhering to the plant ▷



Most plant geneticists now believe that domestic corn was originally selected from *teosinte*, a wild perennial grass which still grows in central Mexico (A). It has only a single row of six to 10 hard seeds. A grain head with a double row of kernels provides more food per plant (B). Inch-long cobs of ancient primitive corn had 50 to 60 kernel spaces (C). None of maize's wild ancestors compare to our modern domestic varieties (D).

long enough to be harvested. With wheat, barley, oats and rice, as well as maize and other grains, domestication resulted from a selection process which accompanied human harvesting of these grains, over many centuries of time. Genes were selected which gradually resulted in a larger proportion of individual grains which stuck to the plant. Harvesting involved humans entering fields or patches of these grains, where their movements caused the wild seeds to loosen and fall from the plant. Those seeds which had more tendency to stay on the plant thus became the larger share of those which were harvested. As early human harvesting from the wild and the consequent slow domestication of many generations of these selected seeds continued over long time periods, and as deliberate planting of them was done, more and more plants began to have genes for seeds which did not readily disperse.

Early Americans probably selected strains of teosinte which had this important characteristic. This difference resulted in more grains with genes for clinging to make it into the harvest basket, while most of those which did not cling fell to the ground. Then, somewhere along the mysterious path of teosinte's domestication, another important genetic difference happened: the grain head developed more kernels and more than one row of them. Archaeological excavations in the Tehuacan Valley in Mexico have recovered ancient "corn" cobs which have 50 to 60 kernel spaces on a cob about an inch long. This wild corn is thought to be a transitional stage between

teosinte and modern corn by a growing number of scientists. This hypothesis has recently been supported by breeding experiments which were successfully designed to select more "primitive" forms of corn by crossing teosinte with modern and primitive corn. Primitive corn is still grown in rural Mexico.

The genetic selection and gradual transition from those early inch-long ears of wild corn to longer, cultured ears which had larger and greater numbers of kernels continued over several thousand more years, and corn culture spread from Central Mexico both north and south. In what is now the United States, two great cultures of corn-growing, mound-building Native American tribes once occupied the land. The first of these great cultures had a relatively small corn, perhaps averaging only two or three inches long, but the later culture had what we would consider to be a full-sized corn—although these did not compare to today's super forms.

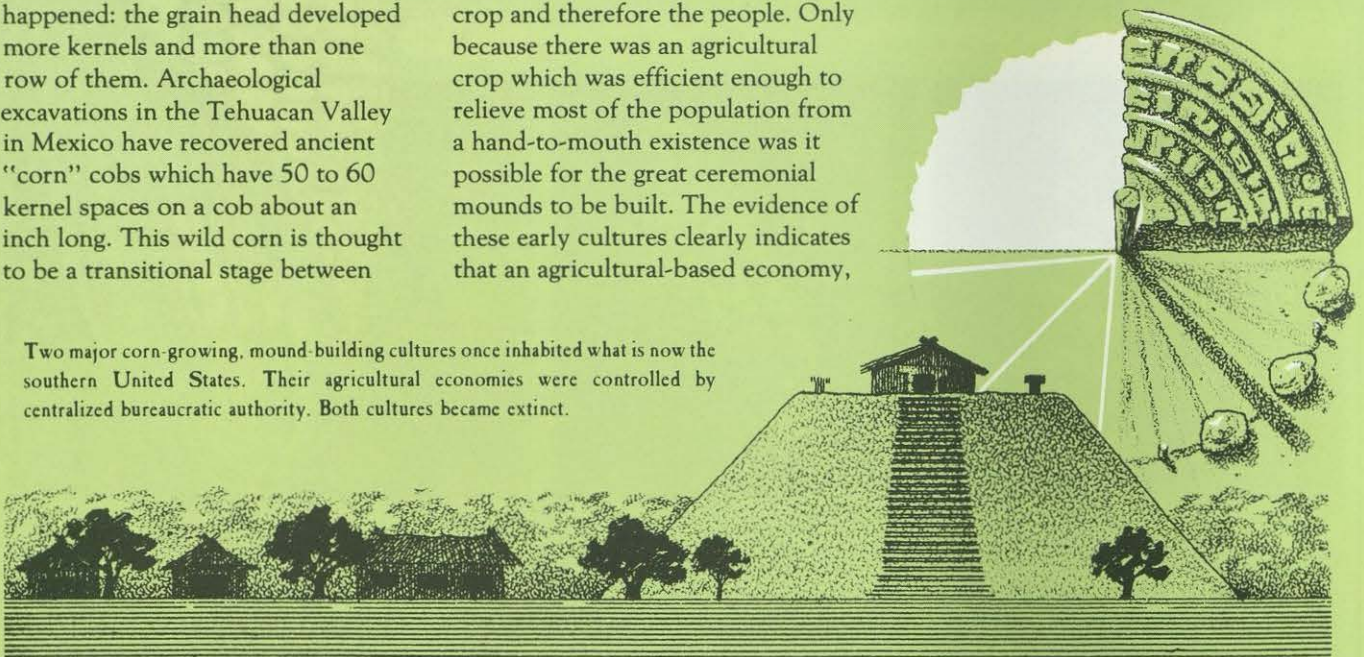
The availability of corn which could be readily cultivated, successfully harvested in sufficient quantities and stored for long-term use was directly responsible for both these cultures having the community time and available energy to form organized bureaucracies which controlled the crop and therefore the people. Only because there was an agricultural crop which was efficient enough to relieve most of the population from a hand-to-mouth existence was it possible for the great ceremonial mounds to be built. The evidence of these early cultures clearly indicates that an agricultural-based economy,

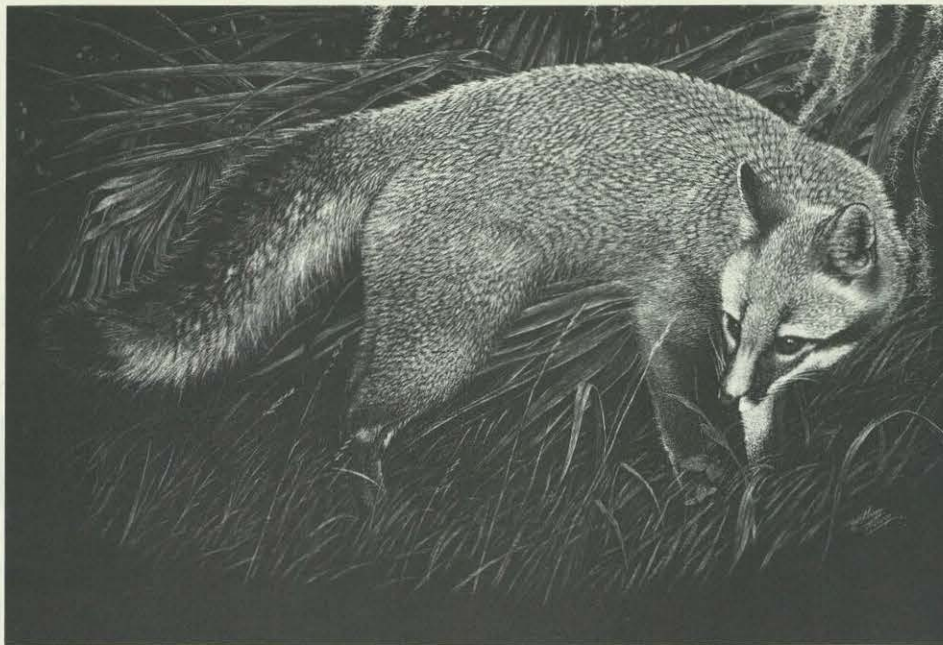
in place of earlier hunter-gatherer economies, made possible the first cities in America—all because of genetic selection of a wild plant.

Anthropological evidence from many parts of Mexico, in the forms of language and oral history refer to teosinte as *madre de maiz*, which means "mother of maize." In some areas today, teosinte is encouraged to grow near fields of primitive corn and it has been confirmed that the pollen from the teosinte improves the harvest of kernels from the primitive corn. Probably not considered by the peasant farmers who grow these crops is the exchange of genes which occurs from the cross pollination of their corn by the teosinte, and which results in hybrid vigor for their crops. Some of these individual corn plants have had as many as 4,000 kernels on a single plant.

Today's agricultural geneticists are conducting many experiments with genes from teosinte, primitive corn and modern corn. The great hope is that the genes which make teosinte perennial can be bred into a line of modern maize. If this effort is successful, it could lead to the development of a perennial strain of modern corn which would not need to be planted each year. The savings in energy alone would be enormous and the benefit to humankind immeasurable. □

Two major corn-growing, mound-building cultures once inhabited what is now the southern United States. Their agricultural economies were controlled by centralized bureaucratic authority. Both cultures became extinct.





Overall Size: 17"H x 25"W. Image Size: 11 1/2"H x 17"W. Frame not included.

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Callene's First Deer

Youngsters and their adult supervisors enjoy their first Commission-sponsored youth hunt.

By Larry Martin

Regional Director, Northeast Region

There may have been a little apprehension in the mind of nine-year-old Callene Wynhoop when she stepped off the bus before dawn inside the Camp Blanding Wildlife Management Area. This was to be a big day in her life, and it was the first hunt ever sponsored by the Commission especially for young people under the age of 16.

Three weeks previously, most all the young hunters and their supervising adults had attended a briefing period, and at that time had drawn their stand site numbers. Callene drew number seven on the north end of the Cantonment Area. After a hunting safety discussion, she was given an opportunity to visit her stand to become familiar with the terrain there.

On the morning of the hunt, the adult supervisors were busy sorting out portable hunting

stands and getting their youngsters' equipment together for several minutes. While waiting for her supervisor, who is also her older brother, Callene anxiously slapped at mosquitos. Finally, he had the gear arranged and the two walked off together through the darkness in the direction of stand number seven, their site for the hunt.

At the stand, Callene and her brother quietly set up their stand in a tree to be ready before daylight, which was rapidly approaching. As she patiently sat, she could hear the bus stopping to let off other young hunters and their adult supervisors down the road.

As the darkness turned to gray, then twilight, the woods came to life. Bobwhite quail whistled in the distance, a squirrel barked at occasional military jeeps passing not far away, and an owl hooted to the world that this area had been staked out as its territory.

The first deer Callene spotted seemed to come out of nowhere. Her brother saw it first. It stayed pretty much out of gunshot range as it quietly fed on the early crop of acorns. It was a doe, and even though the hunt was for either-sex deer, she did not take a chance on the long shot. They enjoyed watching the doe feed, and before long, it disappeared into the brush.

After another thirty minutes, Callene's patience was rewarded when a nice three-point buck stepped out of the bushes to her right. She poked her brother to indicate she had spotted something, and they both sat motionless as the big deer fed in a circle. When it crossed directly in front of them, only 20 yards away, Callene gently raised her 20-gauge single shot and cocked the hammer. The deer heard the click and threw its head up to listen. That was all the target she needed to touch off the trigger.

Although not all the 37 young hunters who participated the first weekend of two weekend hunts were successful, six others told stories similar to Callene's, and had their deer as proof. The second weekend was even more productive; 38 hunters harvested 14 deer. The total of 21 deer for both youth hunts indicates a success rate of 26 percent.

More than 200 applications from throughout Florida had been received at the Commission's regional office in Lake City for these two hunts, and 40 were drawn for each of the consecutive weekends. All hunters had to be under 16 years of age, and have a supervising adult with them during the hunt. Another requirement was that both the hunter and their supervising adult attend a special briefing session prior to the hunt dates. Several topics were covered at these sessions including the requirements for hunter-orange caps and vests, safety tips on gun handling, an explanation of the military arsenal kept at Camp Blanding and the rule that only shotguns and buckshot would be permitted in the Cantonment Area.

In preparation for the hunt, Commission personnel had previously selected 40 stands throughout the 4,500-acre area. Each was numbered and marked at the site, as well as on a special map for the hunters. Even though the military's building construction is heavy in this small area, the deer population is excellent and it makes a fine place for training youngsters in the sport of hunting deer.

Although this was the first hunt sponsored by the Commission specifically for young hunters, it was very successful. Both the young hunters and their supervising adults were able to experience the privilege of hunting for Florida's most popular big game animal. □

Bird Watching Eye to Eye

Thomas H. Miner does his bird watching from this portable perch, which he mounts on his truck for jaunts to various lakes, ponds and marshes in central Florida. Perched about 20 feet above ground and using a 20-60 power Tasco spotting telescope, he generally sights birds from one-half to three miles away. He also uses 10-40 power binoculars with 60mm wide-angle objective lenses.

In this photograph, Tom is parked on the shoulder of U.S. 441 where it traverses Paynes Prairie, a 12,000-acre marsh about four miles south of Gainesville. William Bartram wrote about this same wet prairie after his travels to the area during 1774, calling it "the great and beautiful Alachua Savannah."

Tom says he has catalogued around 60 species of birds other than the common varieties found in riparian habitats. He says he won't claim a new sighting until he has watched the bird from different angles and in various phases of light. This often takes several outings.

He tells of one exciting observation he made early one morning when he watched a red-winged blackbird about three miles away dive bombing a turkey vulture that was trying to rob the blackbird's nest.

The birds don't seem to mind sharing the air with him, Tom feels, and some of them, such as anhingas and ospreys, often circle in for a closer look at him and his perch. But the birds aren't all he attracts. People driving by often pull over to take a look at his unusual rig and talk to him about it.

"As much as I like bird watching," he said, "I think I get just as much pleasure from the people who see me and stop to talk about birds and what I'm doing up on that ladder."

—Frank Rathbun



Frank Rathbun-Photograph

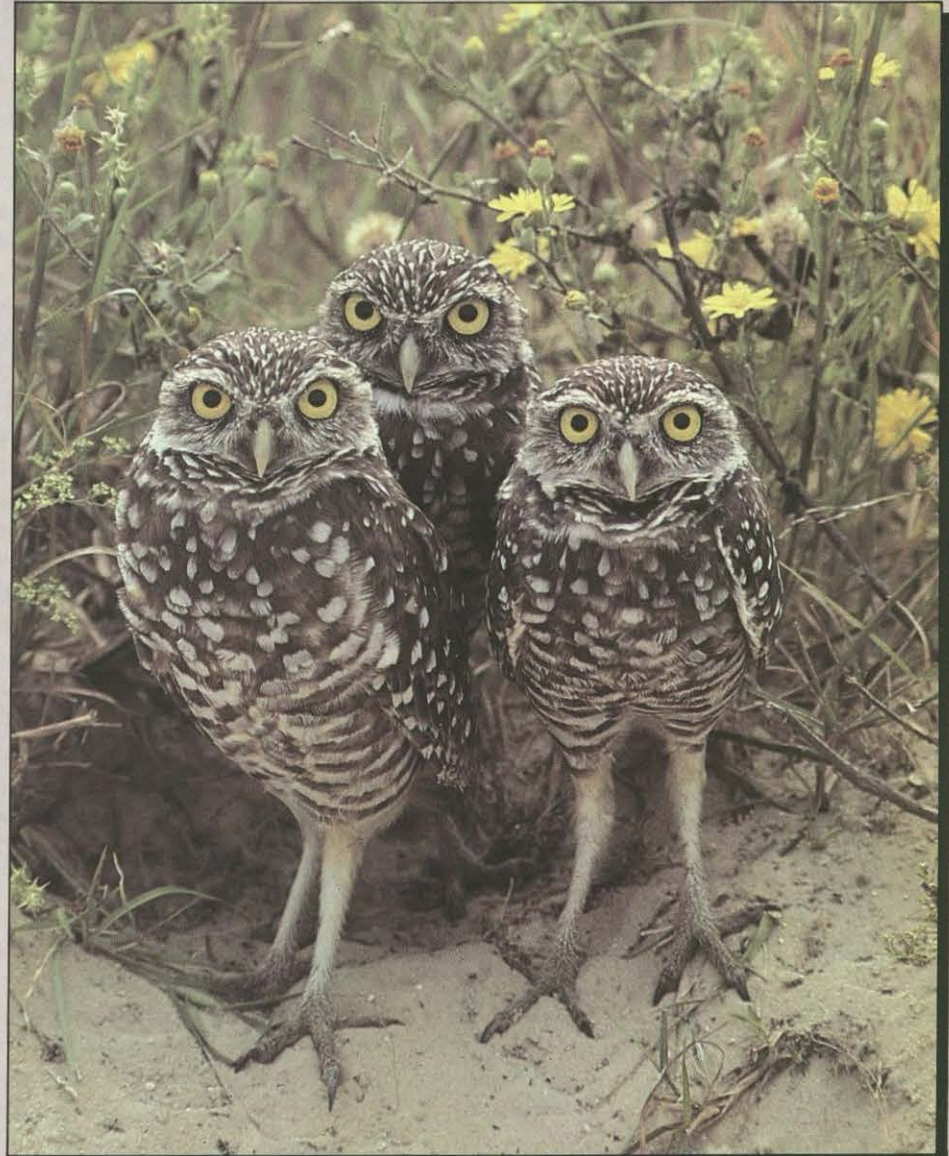


Delicate Balance

When all the birds found in Florida are considered, the burrowing owl is truly among the most unique by virtue of its unusual habits. Whereas most of our bird species depend on trees and shrubs to provide their food, shelter, perches and nesting sites, the burrowing owl prefers to make its living in treeless grasslands, where it spends most of its time on the ground or underground.

Burrowing owls are a mere nine inches from head to tail, and have a 20-inch wingspan. This species shares the title of "Florida's smallest owl" with our forest-dwelling screech owl. As its name implies, burrowing owls dig burrows which are typically situated on dry, elevated sites which have sandy soil. Most often dug in grasslands or pastures, their burrows average five inches wide by three and one-half inches tall and from four to eight feet long. Burrows are used for loafing and nesting. This owl has shown an unusual ability to adapt to artificial pasture-like habitats created by man and, as a result, now occurs on many airports, school and college campuses, golf courses, and industrial parks in southern and central Florida.

They typically prey on large beetles, grasshoppers and other insects, but will at times take small birds, frogs, lizards, crayfish, snakes and even fish. Hunting usually takes place at dusk and dawn, but unlike other owls, it is common for burrowing owls also to be active by day or night. They are somewhat tolerant of human presence and can at times be approached to within relatively close distances. When



Barry Mansell-Photograph

Species: Burrowing owl (*Athene cunicularia*)

Florida Status: Species of Special Concern

approached, they exhibit a distinctive bobbing or bowing behavior which has earned them the local name "howdy bird."

In Florida, the burrowing owl is classified as a species of special concern. As such, it is provided specific protection under authority of the Game and Fresh Water Fish

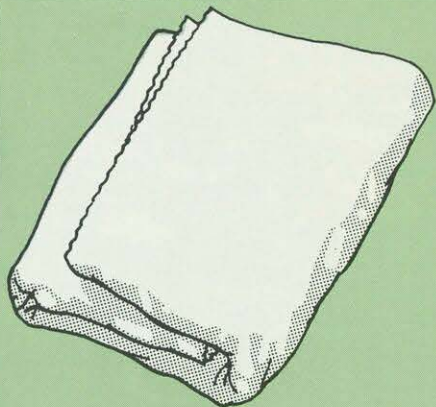
Commission. Primary reasons for its special status include degradation and development of its preferred grassland habitats and the insecurity or impermanence of the man-made habitats it now uses.

—Vic Heller

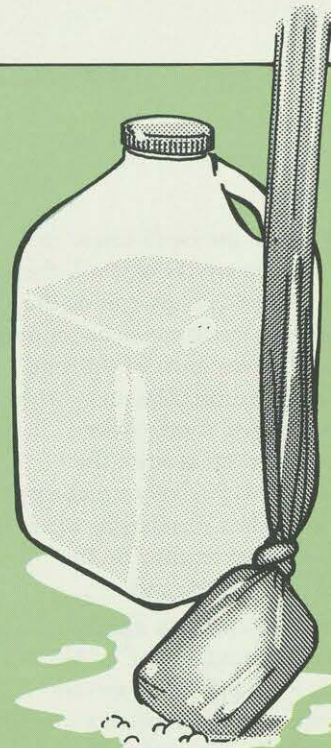
Ease on out

Try these helpful hints and common sense practices to make your stay outdoors more enjoyable. Share your original tips with FLORIDA WILDLIFE and we'll pay you \$5 for each one used. Please include your name, mailing address and Social Security number. Unused tips will not be returned.

These Hints From Judy A. Busby



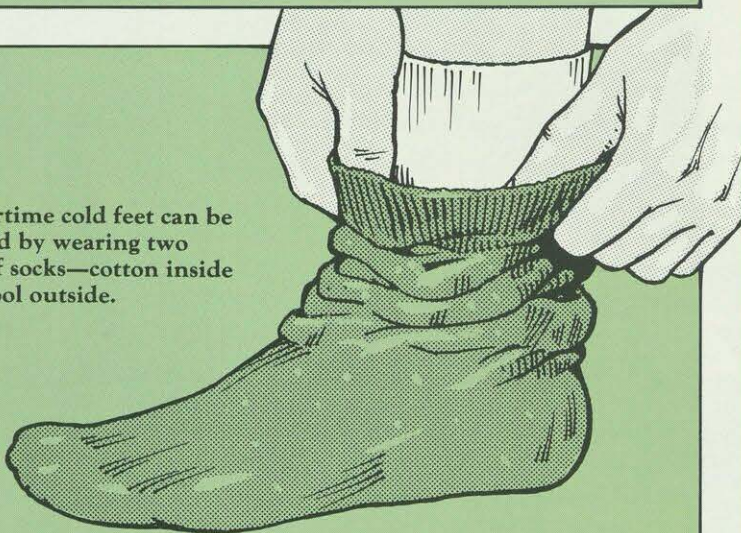
Wrapping sandwiches and other snacks for "on the stand" eating in soft paper towels or napkins instead of crispy plastics lets you unwrap them silently. Not only will this keep from spooking any game around, but the paper goods also come in handy for personal hygiene.



Plastic milk jugs and large soft drink bottles make good water containers for drinking and washing.

A foot end from panty hose makes a handy carrier for a bar of soap. Tie the hose to the handle of your water jug (or other convenient place) to keep it clean and where it can be found.

Wintertime cold feet can be warmed by wearing two pairs of socks—cotton inside and wool outside.

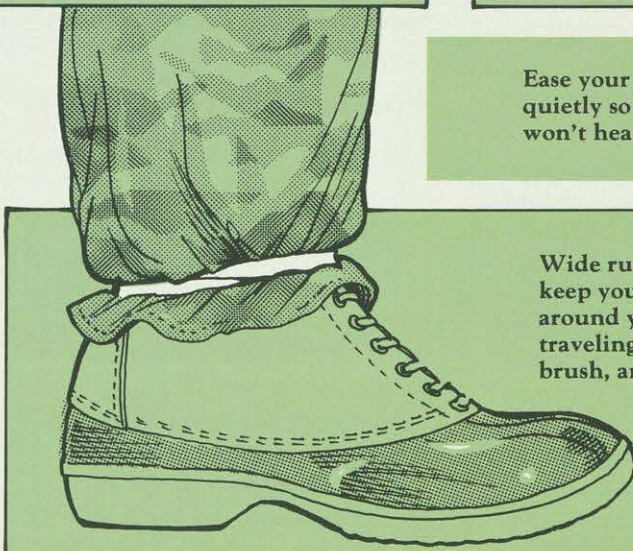


Ease your gun safety off quietly so that big buck won't hear it.

Extra wingnuts on portable tree stands can help avoid problems with safe assembly if you should lose one of these main structural parts.



Wide rubber bands can keep your pants legs snug around your boots when traveling through the brush, and help keep your feet and legs warm on cold days.



More than 66 million Americans watch and photograph wildlife in this country and there has been a number of excellent books published in recent years which are devoted to taking pictures of Nature's creations. A few of these are briefly described here:

The Nature Photographer's Complete Guide to Professional Field Techniques is a 1984 work by John Shaw, who has been hailed as "one of the best nature photographers around." One view of his book supports this praise completely. In a single 144-page volume, Shaw covers the rules of thumb, equipment use and techniques for working with natural light to bring out the most in any subject. Both ordinary and unusual situations are discussed. This great how-to book really tells and shows you how, in sensible terms and with 140 lavish color illustrations. Shaw has been a regular contributor of strikingly beautiful images to *Audubon* and *National Wildlife*, and many of his nature photographs appear in books and filmstrips. Published by Amphoto/New York, it is available in paperback. This book would be my choice of the few listed here as the best single nature photography book to add to the outdoor library. In addition to teaching technical excellence, Shaw stresses the important philosophy of taking care of the wild things we love.

Visions of the Wild--A Photographic Viewpoint is Volume 1 of the Michigan Heritage Series, part of a very unique program of Michigan Natural Resources Magazine (Michigan Department of Natural Resources). Published by Woolly Bear Productions/Lansing, Michigan in 1980, this little-known book is an album of the outstanding nature photographs of John Shaw and Larry West, two of America's best full-time wildlife photographers. A flowery text by Susan Shaw complements its many color full-page, double-page and smaller-sized pictures of the North's environment and living things. Subjects range from dew drops to full moons, frogs to deer, pastels of moody light to colors of the seasons. At least one picture graces each of its 127 oversized pages. This one is a winner for rainy day study and contemplation.

Wildlife Photography: The Art and Techniques of Ten Masters, a 1982 Amphoto/New York book by Ann Guilfoyle and Susan Rayfield, shows miniportfolios for 10 of the world's best known wildlife photographers. Its 176 large pages have more than 120 top examples of the art. A well-written text explains the field and studio techniques used by Leonard Lee Rue III, Jeffrey O. Foott, Dwight R. Kuhn, Caulion Singletary, John Shaw, Ed Bry, Gary R. Zahm, Thase

Daniel, Hans D. Dossenbach and Valerie Taylor. Collectively, these 10 masters of wildlife photography have taken millions of pictures in every imaginable niche on Earth. The book's very practical text gives the reader an appreciation for the dedication, ethics and endurance of these individuals and their work. The authors have done an excellent job of explaining, through the works presented in the book's colorful pages, such specialties as animal portraiture, wilderness and studio work, close-up, underwater and "roughing it" with cameras in the field. Technical data is provided which every photographer can use. A short section at the end provides some realistic advice on selling nature pictures to books, magazines and other markets.

How I Photograph Wildlife and Nature is Leonard Lee Rue III's most recent contribution to our practical and aesthetic knowledge about living things. Rue is considered by many to be America's leading photographer/naturalist; his "animal portraits" and other wildlife pictures are used by more than 50 publishers a month. He has taken thousands of excellent images of hundreds of species around the world. Rue's published credits have included *Florida Wildlife*, *National Geographic*, *Audubon*, *National Wildlife*, *Field & Stream*, *Sports Afield*, *American Forests*, *Natural History*, *Time* and *Newsweek* to name only a few. The basics of photography, use of equipment and Rue's field techniques for photographing scenics, wildflowers, insects, reptiles, amphibians, birds and other animals is thoroughly explained. A sense of conservation ethics and a lifelong love for Nature graces this usable 286-page book. Having mostly black and white illustrations, almost every page has a picture. Published in 1984 by W. W. Norton & Company/New York.

Wings on the Southwind—Birds and Creatures of the Southern Wetlands features "expedition photographer" Thase Daniel's intimate color views of the wildlife and ecosystems of southern swamps. A basic text by Franklin Russell, a New Zealander known for his articles in many magazines, including *Audubon* and *National Geographic*, rounds out this 158-page oversized book. Its most redeeming qualities, however, are Daniel's pictures of wetlands in Florida, Georgia, Alabama, Louisiana, Virginia, South Carolina, Texas, Oklahoma and her native Arkansas. A first major book devoted exclusively to her Southern photographic works, it is by no means her only accomplishment. Her quality photographs have been used in more than 45 other books and by many nature magazines. Published by Oxmoor House/Birmingham, Alabama, this book is a worthwhile album that teems with visions of life to be found in our valuable, vanishing wetlands. □

Give us your best



FLORIDA WILDLIFE's 1986 nature photography contest is open! This is our third annual contest, and it promises to be the best one yet. Last year, we received a grand total of 809 individual photographs in four subject categories.

This year's contest offers a chance for nature photographers to enter their best color photographs of Florida's wild living things.

Our state has hundreds of living species to take pictures of, and no closed seasons for enjoying this very popular outdoor activity.

Last year, birds represented 49 percent of the entries. There were beautiful pictures of wading birds, especially, and a fair number of songbirds. Those photographs that were selected by the judges showed some type of behavior other than perching, with only one exception.

The category for fish, amphibians, invertebrates and reptiles represented 27 percent of the entries. This was the most visually diverse group and included everything from crabs and insects to snakes and lizards. Mammals comprised 15 percent of the entries and the final category, hunting and fishing activities, accounted for nine percent.

All the winners demonstrated sharp focus, excellent composition and rich colors, and they tended to use full-frame or nearly full-frame shots. Getting close to some animals is very hard to do, but those who were able to do it clearly gave their entries an edge over those where the main subject was relatively small in the frame.

The 1986 contest will close Monday, June 30, so you will have almost half the new year to enjoy the fun and enter the friendly competition. Please be sure to read and follow all the rules, and remember, we'll be anxiously waiting to see your best entries.

Category D of this year's contest should offer more opportunity for entries as it has been considerably broadened in scope. Such subjects as scenics, wildflowers and people doing things outdoors can be entered in Category D. Only this category may show humans or man-made objects.

Winning entries will be announced in the September-October 1986 and November-December 1986 issues of FLORIDA WILDLIFE.

Follow these

1. Only original 35mm color slides and 2 1/4" x 2 1/4" color positives (transparencies) are eligible. Prints, negatives and duplicate slides are not eligible.
2. Each single photograph entered must be accompanied by a completed, legible Official Entry Form. Photocopies of the Official Entry Form will be accepted. All Official Entry Forms (or photocopies) must have an original signature. Photocopies of signatures will not be accepted.
3. Up to three (3) individual photographs may be entered in any one or all of the 1986 contest categories, but each single photograph may be entered in only one category. Entry forms must be labeled "A, B, C or D" to show in which category each photograph is entered. The 1986 categories are as follows:

- Category A - Wild birds
- Category B - Wild mammals
- Category C - Wild animals other than birds and mammals
- Category D - Florida's natural environment and human interaction with this environment; including hunting, fishing and other ethical uses of the state's natural resources. Only Category D may show people or man-made objects.

Shot!

rules closely—

4. All entries must be accompanied by a self-addressed, stamped envelope for return. Send one return envelope per category entered. Multiple entries in a single category which are sent at one time need only one return envelope. Do not send money—attach sufficient postage stamps to the return envelope, please. Entries will be returned after judging.
5. Each entry must be attached to a 3" x 5" card (such as a standard index card) showing the photographer's name, mailing address and Social Security number on the card.
6. Only photographs taken in Florida are eligible. Domestic or exotic species are not eligible.
7. Only photographs which have never been published in a magazine are eligible.
8. Entrants are responsible for notifying FLORIDA WILDLIFE of any change of their mailing address prior to the date their entries are returned.
9. Entries must be mailed to FLORIDA WILDLIFE PHOTO CONTEST, 620 South Meridian Street, Tallahassee, Florida 32301, and must be received by June 30, 1986, to be considered. Any entry not meeting the requirements of all the rules will not be considered.
10. Decisions of the judges will be final.

CATEGORY: _____

Please Type or Print Plainly

Photographer (Entrant): _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Number of Entries: _____

Photograph No. 1 was taken in _____ County
and is _____

Photograph No. 2 was taken in _____ County
and is _____

Photograph No. 3 was taken in _____ County
and is _____

I certify that I am the photographer and owner of these entries (photographs) and that all entries were taken in Florida, and I hereby give the Florida Game and Fresh Water Fish Commission my permission to publish my entries in *Florida Wildlife* in accordance with the rules published in the January-February 1986 issue.

Signed: _____ (Entrant)

Social Security Number: _____

I, _____ (model's name),
for good and valuable consideration, do hereby give _____

_____ (photographer's name)
and *Florida Wildlife*, an information and educational periodical magazine published by the Florida Game and Fresh Water Fish Commission, an irrevocable right to use my name (and any fictional name) and photograph for publication in *Florida Wildlife*. I have read this release and fully understand its contents.

I affirm that I am 18 years of age or older.

Witness Signature: _____ Signed: _____

Address: _____ Address: _____

Date: _____

Guardian's Consent for Minor Models

I am the parent or legal guardian of the above-named minor and hereby approve the foregoing Model Release and consent to the use of said minor's name and photograph as aforesaid.

I affirm that I have the legal right to issue such consent.

Witness Signature: _____ Signed: _____

Address: _____ Address: _____

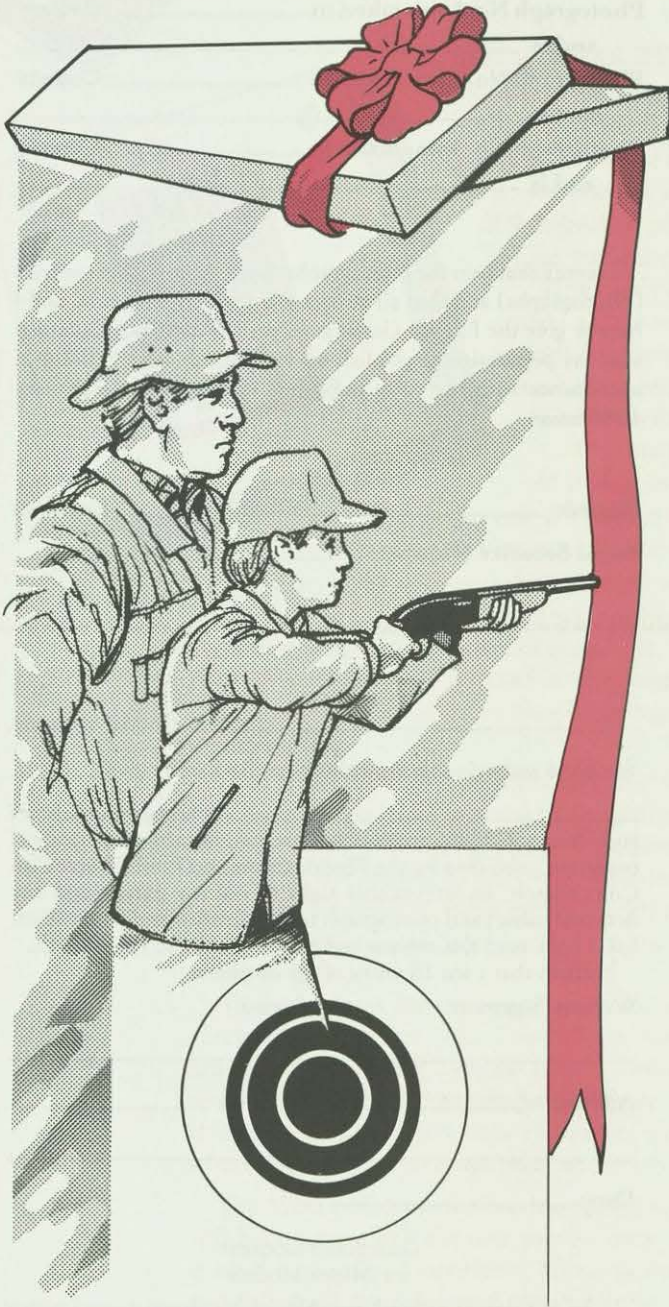
Date: _____

Official Entry Form

Model Release

It's The Law

By Major Kyle Hill



**SAFETY
RESPONSIBILITY
PROFICIENCY**

Every year at this time, it is again necessary to emphasize the importance of abiding by Florida Statute 790.22, regarding the use of guns by children under the age of 16 years.

In the field, I have frequently witnessed very young children hunting unsupervised by any adult; some armed with .30-.30 rifles and 12-gauge shotguns. This is not only a flagrant violation of Florida law, but is very dangerous to the child and other hunters in the area. Numerous times each year throughout the United States, *experienced adult hunters* fatally shoot fellow humans after mistaking them for deer, turkey or other game. Children are even more susceptible to "Buck Fever" and for this and other reasons, must never be left alone with a gun.

No matter how physically "grown-up" a young person appears to be, they are not mentally ready to make sound judgment calls in the excitement of a hunt. Once that bullet is fired, it can never be recalled. Don't saddle a youngster with a lifetime of guilt because you failed to take your responsibilities seriously. The statute reads as follows:

Florida Statute 790.22

(1) The use for any purpose whatsoever of BB guns, air- or gas-operated guns, electric weapons or devices, or firearms...by any child under the age of 16 years is prohibited unless such use is under the supervision and in the presence of an adult.

(2) Any adult responsible for the welfare of any child under the age of 16 years who knowingly permits such child to use or have in his possession any BB gun, air- or gas-operated gun, electric weapon or device, or firearm in violation of the provisions of subsection (1) of this section is guilty of a misdemeanor of the second degree, punishable as provided in s. 775.082, s. 775.083, or s. 775.084 [up to \$500 fine and/or 60 days in jail].

You'll notice that the law requires not only the supervision, but the *presence* of an adult. *Presence* means "the part of space within one's immediate vicinity." Thus, it is impossible to supervise a child if you are not in the immediate vicinity. Ideally, you should be behind the child, in a position to *look down the gun barrel* to positively identify any target *before a shot is fired*. Take your children hunting, but take care to make it a trip they will want to remember! □

By Captain Ed Tyer
Hunter Education Coordinator



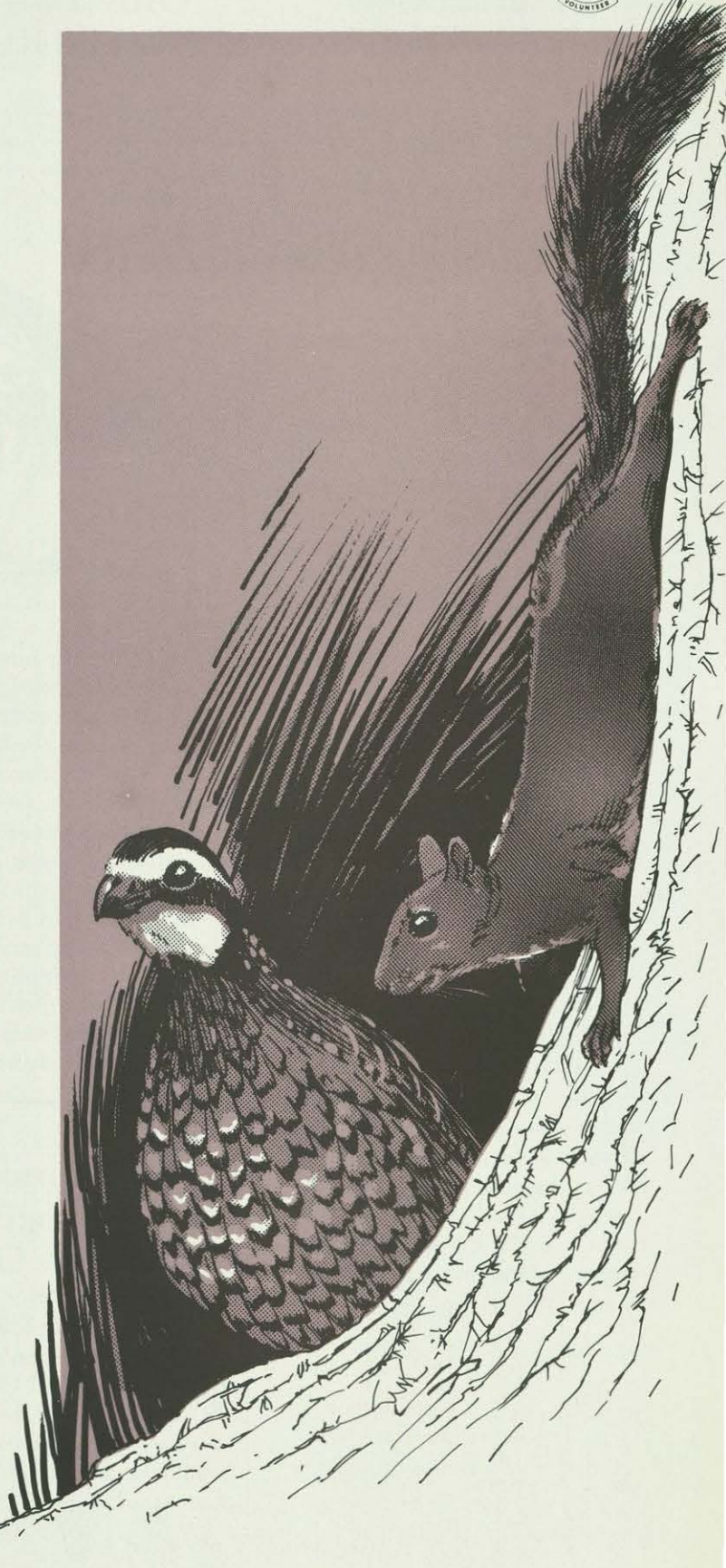
As big-game hunting season ends, many hunters will put away their guns until next year, but by doing this, they will miss a very rewarding portion of the hunting season. Small-game and upland-bird season will continue through March 3, 1986, and rabbit season is open year-round throughout the state (except on wildlife management areas). With liberal bag limits and an abundance of small game and game birds, most hunters stand a better chance of putting meat in the pot by hunting small game.

Hunting opportunities are also increased when small-game hunting because these animals require less acreage than large animals. A good population of rabbits can be supported on a small farm or in a grove that cannot support a deer herd. You'll also find more small-game habitat located closer to our urban population centers than you will find large expanses of wilderness. This allows hunters more opportunities to run out for an afternoon of hunting and be home for supper.

The one thing that doesn't change between small- and large-game hunting is the need to practice safe gun handling techniques. Many people use .22-caliber, rim-fire rifles for small game hunting. Some think that the "little .22 cartridge" they use for shooting squirrels and rabbits is not much more dangerous than an air rifle; however, this is far from the truth. A projectile fired from a .22-caliber rim-fire rifle is capable of inflicting considerable property damage and personal injury. Many a poacher has been caught using a rim-fire .22 rifle to kill deer, and there have even been instances where bears have been killed with .22s. With this potential in your small-caliber firearm, you must use care at all times.

Courtesy and common sense are the keys to safe gun handling. Courtesy includes never pointing your gun at anyone, including yourself. Common sense includes never placing a loaded gun in a vehicle or carrying it while loaded into a camp or house, not loading the gun until you are safely in your hunting area and unloading your firearm when you cross obstacles such as fences and foot logs.

If you practice courtesy, common sense and the number one rule of safe gun handling—*always keep the muzzle pointed in a safe direction*—you will ensure that you and your fellow hunters will have a safe and enjoyable hunting experience. So don't let a good chance pass you by, get out and enjoy yourself. Hunting for your supper can be a very rewarding experience. A big pot of squirrel and rice is hard to beat on a winter evening. □



Conservation Update

Compiled by John Waters Jr.

Florida Gets Federal Funds

Florida has received a preliminary apportionment of \$3,364,303 in federal monies for 1986 from two special sport fish and wildlife restoration funds. The sport fishing restoration account ("Dingell-Johnson" program) will provide \$1,758,256. The 1984 federal legislature added money to this fund by extending the excise taxes provided by the program to include some types of previously untaxed fishing equipment, and also added a share of motorboat fuel taxes. These new additions to the program are the first new funds since 1950. For this year, the expanded program monies amounted to \$1,432,979, or 81.5 percent of the sport fish restoration apportionment.

Another \$1,606,047 has been apportioned to the state for wildlife restoration and hunter education, with \$1,292,547 of this going to wildlife and \$313,500 for hunter education. These dollars are funded by the "Pittman-Robertson" program, which provides for an 11 percent excise tax on sporting arms, ammunition and certain archery equipment and a 10 percent excise tax on pistols and revolvers.

The federal apportionments to each state consider the state's number of hunting license holders and area of the state for the Pittman-Robertson funds. For the Dingell-Johnson monies, the state's number of fishing license holders and the area of the state, including coastal waters, are considered. □

Only Two Male Dusksies Remain

With no known females with which to breed, the last known two male dusky seaside sparrows live in captivity, unknowingly awaiting



Dusky
Seaside
Sparrow

extinction of their subspecies. The only chance to save their genes is with a captive breeding program designed to cross the dusksies with female Scott's sparrows, a closely related subspecies. About 6,000 dusky seaside sparrows were estimated to be living when the subspecies was first noted in 1872.

Ironically, under present U.S. Fish and Wildlife Service definitions, the resulting hybrids are considered as exotics, and could be prohibited from being introduced into federal wildlife refuges. □

Top Honors Go To Biologist and Wildlife Officer

Wildlife Officer Mike Edwards of the Northeast Region was recently named as Florida's "Outstanding Wildlife Officer of the Year." He was chosen from among 219 wildlife officers who work for the Commission.

Fisheries biologist Phil Chapman of the South Region was recognized in October by the Florida Wildlife Federation as the "Water Conservationist of the Year." The award was given for Chapman's research on the use of regulations as a fisheries management tool at the Tenoroc State Reserve Fish Management Area. □

Private Island A Major Nest Site

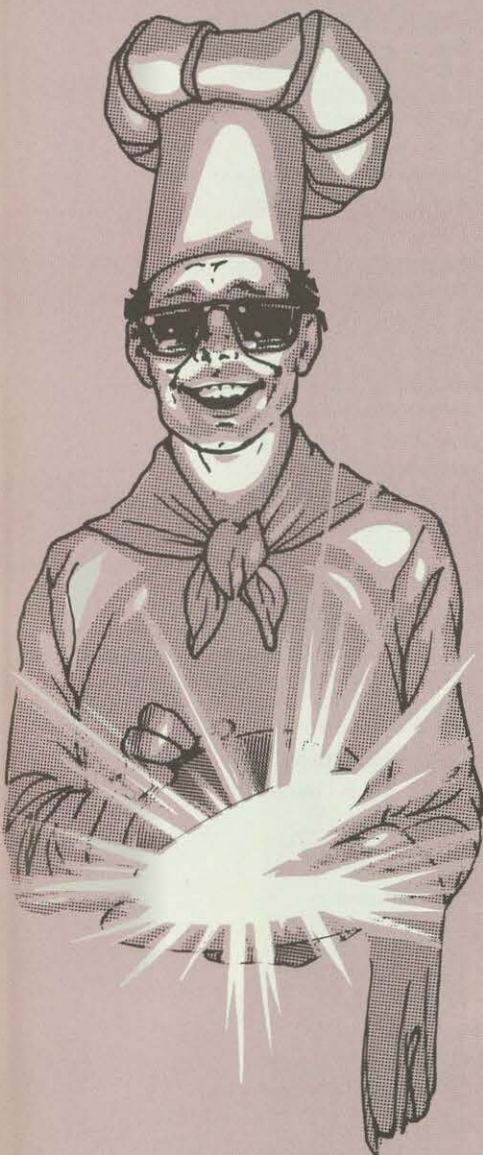
Grant Island, a 50-acre elongated strip of sparsely settled land surrounded by the Indian River in south Brevard County, was once used as a pineapple farm. But in recent years, it seems to be a favored nesting site for endangered wood storks, along with other species of colonial nesting birds.

However, the Commission has recently become concerned with the disturbances of the birds caused by people who visit the nesting areas by boat. There is no bridge to the small island.

Although the south end of the island remains undeveloped, Commission wildlife biologists say if development occurs, it will probably drive away the birds which frequent that part of the island. Already, there have been human-caused problems with the shy wood storks abandoning their nests during the egg incubation season and not returning. Crows, raccoons and other predators consumed the abandoned eggs in a short time. □

Sunshine Bass For Aquaculture?

Recent test marketing of cultured sunshine bass, by Commission fisheries biologists in Lakeland, was promising for development of a commercial sunshine bass industry in the state. The small-scale project found consumers willing to pay \$2.50 per pound for cultured sunshines weighing an average of 1-½ pounds. Under Commission rules regulating freshwater fish, this cultured freshwater hybrid may be sold legally. The sunshine is a manmade hybrid between the white bass and the striped bass. □



Florida Breeding Bird Atlas Project

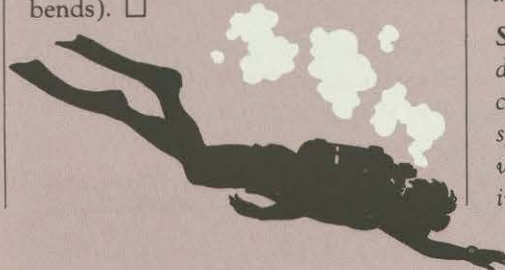
The Commission, with assistance from the Florida Audubon Society, has begun a major project to accurately map the distribution of more than 180 bird species which are recorded as having nested in Florida. Experienced birders and newcomers who want to help with the study can learn more by telephoning 305-647-2615. The mapping is expected to take two or three years. □

Noted Scientist Buried in Africa

Dian Fossey, a noted American naturalist who spent most of the past 18 years studying mountain gorillas in central Africa has been buried there, following her murder in late December. She was the first scientist to study the gentle and dignified apes in their native habitat. She was buried in a cemetery she established for gorillas killed by poachers, who frequently take only the animals' heads and hands. □

Nitrox Mixes Endanger Divers

Sport divers in the United States number about three million, and an increasing number of them are using tanks filled with nitrox, a mixture of oxygen and nitrogen gases. Nitrox is used as a substitute for air. The National Oceanic and Atmospheric Administration says that improper nitrox mixtures can be dangerous—they can explode and cause oxygen toxicity or decompression (the bends). □



News Notes

Edmond Halley, the famous English astronomer after whom Halley's Comet is named, also turned his genius to the sea. In 1691, he patented a weighted diving bell which enabled divers to salvage shipwrecks from the ocean's bottom.

66,000 Americans observe and photograph wildlife.

One-Third of Florida's hunting accidents are self-inflicted. Be careful with your own gun, Capt. Ed Tyer advises.

Speckled Perch bedding season starts in late January and early February in most of Florida. It's time to get your tackle ready!

Harper's Beauty, an endangered, yellow-flowered perennial herb which grows in open wetlands of the Apalachicola National Forest, was first noted in 1968, and at the time, only 70 plants were counted. A 1982 study, however, found some 6,000 plants in a roadside colony which apparently had benefited from routine mowing by the Department of Transportation. Some are now being transplanted to other areas.

Lippis dulcis, a South American plant once used by the Aztecs, is reportedly 1,000 times sweeter than sucrose. It is being investigated for potential use in oral hygiene products such as toothpaste and mouthwash.

Florida's Groundwater Standards are comprehensive and are also one of the few standards for water supplies anywhere that address modern problems with pollution. Federal officials are studying Florida's rules and methods as a model to create federal standards.

Coyotes have either been reported frequently or conclusively determined to be living in 18 counties of central, north and west Florida. This adaptive wild canine has been clocked running at more than 40 miles per hour, but they are very shy of people.

Small Nongame Fish such as the dollar sunfish and pygmy sunfish make colorful and successful aquarium specimens, and releasing them back where you catch them does not introduce a new exotic.



Florida Game
and Fresh Water Fish
Commission

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Floridana

Florida's Bok Tower Gardens, near Lake Wales, has been famous for 56 years as the site of the "highest point on the Florida peninsula." At the garden stands the Bok Singing Tower, a majestic 205-foot-high structure built of native coquina stone and marble. It sits on the state's highest natural land point, which is 295 feet above mean sea level.

A keyboard can be played to ring the tower's 53 bronze carillon bells, which are mounted in the top of the tower. Dedicated in 1929, the bell tower was a "gift to the American people," from Edward W. Bok, a Dutch immigrant who made a fortune as writer, editor and publisher around 1900. Bok also created a nonprofit foundation in 1925 for "charitable, scientific, literary and educational activities."

One significance of Bok Tower Gardens can be measured by its nearly 21 million visitors since 1929. Probably, however, the greatest importance of this site is the extensive plantings on the 128 landscaped acres surrounding the tower.

The subtropical garden here has recently been designated by the National Center for Plant Conservation as one of 16 major botanical gardens in the country because of its many rare and endangered plants. The cultivation and propagation of these living resources could someday prove to be very valuable to all of us because of the rare and endangered genes these plants contain. —John Waters Jr.

